

3.6 Summer Use (Pastures 7, 13, 17)

Summary

- active pedestalling of grasses is present in all pastures, but occurs primarily in pastures 7 and 13 where interspatial grasses are less than expected;
- 1.0 miles of stream are in proper functioning condition, 6.3 miles are in functioning at risk condition;
- 79% of springs are functioning at risk;
- upland vegetation has a static to upward trend in condition in pastures 13 and 17 and a downward trend in pasture 7;
- grass species composition departs somewhat from reference conditions, juniper dominates in pasture 7 and at big sagebrush sites in pastures 13 and 17;
- sage grouse breeding and brood-rearing habitat is marginal based on juniper and shrub encroachment;
- one Mud Flat milkvetch population in pasture 7 is healthy and vigorous, but the status of the other population is unknown.

3.6.1 Data Collection

Twelve rangeland health evaluations were conducted in low (7) and big (5) sagebrush communities between July 17 and 26, 2001 (Table 36, Maps 2N, 2S). Five trend plots were conducted in low (4) and big (1) sagebrush communities between 1984 and 1998 (Table 36, Maps 3N, 3S). One sage grouse breeding habitat evaluation and two sage grouse brood-rearing habitat evaluations were conducted in 2001 (Table 36, Maps 2N, 2S).

Table 36. Summary of upland data collected in Summer Use pastures, Nickel Creek Allotment.

Pasture	Data Type ¹	Location	Ecological Site	Condition/Trend ²
7	RHE	10S04W21D	Loamy 13-16	0-
		10S04W28A	Mahogany Savannah 16-22	0-
		10S04W28B	Shallow Claypan 13-16	0-
		11S04W03	Shallow Claypan 13-16	0-
	NPFT	10S04W21B	Loamy 13-16	Down
		10S04W28	Shallow Claypan 13-16	Down
	SBH	10S04W22	Loamy 13-16	Marginal
13	RHE	11S04W14A	Shallow Claypan 13-16	0-
		11S04W14B	Shallow Claypan 13-16	0+
		11S04W23A	Loamy 13-16	0-
		11S04W23B	Mahogany Savannah 16-22	0-
		11S04W23C	Shallow Claypan 13-16	0-
	NPFT	11S04W23A	Shallow Claypan 13-16	Up
		11S04W23B	Shallow Claypan 13-16	Static
17	RHE	11S03W30	Shallow Claypan 13-16	0+
		11S04W24A	Shallow Claypan 13-16	+
		11S04W24B	Loamy 13-16	0
	NPFT	11S04W24	Shallow Claypan 13-16	Static
	SBRH	11S04W30	Spring	Marginal
		11S04W36	Spring	Marginal

¹ RHE – Rangeland Health Assessment, NPFT – Nested Plot Frequency Transect, SBH – Sage Grouse Breeding Habitat Evaluation, SRRH – Sage Grouse Brood-Rearing Habitat Evaluation

² + = none-slight departure from reference conditions, 0 = slight-moderate departure from reference conditions, - = moderate departure from reference conditions, -- = moderate-extreme departure from reference conditions

3.6.2 Livestock Use

Use in pastures 7, 13, and 17 generally occurred in mid- to late-summer between 1986 and 2001; however, some use occurred during spring and fall (Appendix E). Spring use began as early as mid-April in pastures 7 and 13 and fall use generally ended in October. Pasture 13 was rested three times and pasture 17 was rested two times between 1986 and 2001.

The critical growth period for bunchgrasses varies by pasture, occurring earliest (mid-May to mid-June) in the eastern half of pasture 17 and latest (June to early July) in the western portions of pastures 13 and 17. In pasture 7, use during the critical growth period of decreaser grasses occurred approximately 30% of the time between 1986 and 2001. In pastures 13 and 17, use during the critical growth period of decreaser grasses occurred approximately 20% or less of the time between 1986 and 2001.

Total actual use ranged between 427 AUMs in 1987 and 1,685 AUMs in 2000, and averaged 1,277 AUMs between 1996 and 2001 (Appendix E).

Upland utilization of perennial grasses was generally slight to moderate between 1976 and 1997 (Appendix R). Utilization was measured primarily on Idaho fescue in pasture 7 and Idaho fescue and bluebunch wheatgrass in pasture 13 and 17. Utilization was greatest in pasture 7 with light to moderate use occurring on Idaho fescue throughout the pasture and moderate to heavy use occurring adjacent to the trend plots. Utilization was slight to light in pasture 13. Utilization in pasture 17 was moderate when actual use was greater than 200 AUMs and slight when actual use was less than 200 AUMs. Utilization was generally moderate at the trend plot in pasture 17.

With the exception of a portion of Smith Creek that is in a rocky canyon that restricts livestock access and use of riparian vegetation, utilization of riparian vegetation (particularly herbaceous vegetation) was high on streams located in summer use pastures (Table 37).

Table 37. Median stubble height and percent shrub utilization by livestock for streams grazed during summer, Nickel Creek Allotment (0548), 2002.

Stream	Pasture	Site	Date	Median Stubble Height (inches)	Percent Shrub Utilization
Castle	13/17	T11S R4W Sec 26	10/31/00	2.0	-
Smith	7	T11S R4W 1 SESE, Just above Smith-Nickel confluence	10/10/01	-	light
Smith	7	T11S R4W 11 NESW, ~150m upstream of fence at grasshopper trail	10/10/01	3.0	55
Thomas	7	T11S R4W 10 SENE, ~50m upstream of confluence	10/10/01	2.5 ^a	~50%

^aOcular estimate of median stubble height (see USBLM 1999).

3.6.3 Standard 1: Watersheds

3.6.3.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a slight-moderate degree of departure from reference conditions for most indicators in summer use pastures. Accelerated erosion is present in all pastures and watershed health is not comparable to reference areas and site guides.

Hydrologic Function – The amount of surface flow patterns and associated pedestalled plants show a slight degree of departure from reference conditions in pasture 17 and a slight-moderate degree of departure in pastures 7 and 13. Active pedestalling is apparent in all pastures, primarily in flow paths, and is most prevalent in pastures 7 and 13 (11S04W14A, 11S04W23C). Historic activities are responsible for some of the observed pedestalling.

Soil Surface - The amount of bare ground has a slight degree of departure from reference conditions in pastures 7 and 13 and a slight-moderate degree of departure in pasture 17. Surface gravels and rocks are protecting areas from more severe accelerated erosion in all pastures.

Soil surface indicators have a slight degree of departure from reference conditions in pastures 13 and 17 and a slight-moderate degree of departure in pasture 7. There is a low occurrence of organic matter content in surface layers at site 11S04W03 in pasture 7. The occurrence of physical soil crusting is greater than expected at site 11S04W14A in pasture 13. Weak soil surface structure is evident in pastures 7 (11S04W03) and 13 (11S04W14A). Soil surface loss is greater than expected in pastures 7 (11S04W03), 13, and 17 (11S04W24A). Biological soil crust cover in appropriate habitats is less than expected in pastures 7 (10S04W28B) and 13.

Vegetation Cover – The plant community, as it relates to watershed function, has a none-slight degree of departure from reference conditions in pasture 17, a slight degree of departure in pasture 13, and a slight-moderate degree of departure in pasture 7. The low sagebrush sites located in pasture 17 reflect more closely the vegetative community of the reference sites and site guides. Occurrence of bunchgrasses in interspatial areas is less than expected in pastures 7 and 13. There is an imbalance of increaser to decreaser grasses in pastures 7 and 13. Shrub cover is greater than expected at site 11S04W14A in pasture 13 and to a slight degree at site 10S04W28B in pasture 7. Juniper is common in pasture 7 and increasing in pasture 13.

NPFT Data

Percent basal cover of decreaser grasses was considerably greater than that of increaser grasses in low sagebrush communities between 1989 and 1998 (Table 38). Increaser grass cover increased in pastures 7 and 17. Decreaser grass cover decreased in pasture 17. Biological soil crusts provided a moderate amount of cover. Bare ground cover was relatively low; gravel was the dominant cover.

Table 38. Average percent basal cover for decreaser and increaser grasses, biological soil crusts, and bare ground, Summer Use pastures, Nickel Creek Allotment, 1989-1998.

Ecological Site	Decreaser Grasses	Increaser Grasses	Biological Soil Crust	Bare Ground
	mean \pm 95%CI (n)	mean \pm 95%CI (n)	mean \pm 95%CI (n)	mean \pm 95%CI (n)
Shallow Claypan 12-16	7.4 \pm 2.1 (8)	2.1 \pm 1.1 (8)	4.6 \pm 4.1 (4)	18.2 \pm 5.3 (8)

3.6.3.2 Big sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a slight-moderate degree of departure from reference conditions for most indicators in summer use pastures. Accelerated erosion is present in all pastures and watershed health is not comparable to reference areas and site guides.

Hydrologic Function – The amount of surface flow patterns and associated pedestalled plants show a slight-moderate degree of departure from reference conditions in all pastures. Active pedestalling is apparent in pastures 7 (10S04W21D) and 13 where it occurs primarily on bunchgrasses in flow patterns. Historic activities are responsible for some of the observed pedestalling. Active terracettes are present in pasture 13.

Soil Surface - The amount of bare ground has a slight degree of departure from reference conditions in pastures 7 and 13 and a slight-moderate degree of departure in pasture 17. A high amount of surface gravels are protecting areas from more severe accelerated erosion in pastures 7 (10S04W28A) and 13.

Soil surface indicators have a slight degree of departure from reference conditions in pasture 13 and a slight-moderate degree of departure in pastures 7 and 17. There is a loss of surface horizon material in all pastures. The majority of soil loss is primarily historic in pastures 7 (10S04W28A), 13, and 17; however, some current loss is occurring in pastures 7 (10S04W21D) and 13. Physical soil crusts are apparent only at site 10S04W21D in pasture 7. Weakened soil structure is apparent in pastures 7 and 17. Organic matter is reduced in pasture 7 (10S04W21D). The occurrence of biological soil crusts in appropriate habitats is less than expected in pastures 7 (10S04W21D) and 13 (11S04W23A).

Vegetation Cover – The plant community, as it relates to watershed function, has a none-slight degree of departure from reference conditions in pastures 7 (10S04W21D) and 17 and a slight-moderate degree of departure in pastures 7 (10S04W28A) and 13. Occurrence of bunchgrasses in interspatial areas is less than expected in pastures 7 and 13. Decreaser grasses are in proper balance with increaser grasses in all pastures. Cheatgrass is not present in these communities. Shrub cover is greater than expected in pasture 7 (10S04W21D). Juniper cover is greater than expected in pastures 7 and 13.

NPFT Data

Percent basal cover of decreaser grasses decreased in pasture 7 between 1983 and 1998 (Table 39). Percent cover of increaser grasses increased in pastures 7 and 13. Biological soil crusts provided limited cover. Bare ground increased between 1983 and 1998.

Table 39. Average percent basal cover for decreaser and increaser grasses, biological soil crusts, and bare ground, Summer Use pastures, Nickel Creek Allotment, 1984-1998.

Ecological Site	Decreaser Grasses	Increaser Grasses	Biological Soil Crust	Bare Ground
	mean \pm 95%CI (n)	mean \pm 95%CI (n)	mean \pm 95%CI (n)	mean \pm 95%CI (n)
Loamy 13-16	5.8 \pm 26.6 (2)	0.9 \pm 11.1 (2)	2.0 (1)	46.9 \pm 19.8 (4)

3.6.4 Standard 2: Riparian Areas and Wetlands

The majority of the streams (6.3 miles of 7.3 stream miles) located in pastures grazed during the summer are in functioning at risk condition. Livestock use levels of riparian vegetation were too high for bank stabilizing species (willows, sedges, and rushes) to remain dominant in riparian plant communities. Consequently, streambanks were inadequately vegetated to resist the erosive forces of high stream flows.

The majority of 25 springs located on public land in these pastures are negatively impacted by livestock grazing, with 79% (15 of 19) of the springs that were assessed in functioning at risk condition. Spring wetlands that are functioning at risk typically have 5-15% bare ground present and occasionally active headcuts and incised channels.

Stream Inventories/Assessments

Much of Smith, Thomas, and Little Thomas creeks in pasture 7 are in functioning at risk condition (Map 4N). Riparian areas that are easily accessed by livestock on these streams receive high levels of livestock use during the summer. As a result streambanks are inadequately vegetated to withstand the erosive forces of high stream flows and bank-stabilizing species are often lacking (Table 40). Portions of Smith and Little Thomas Creeks that are in rocky canyons that restrict livestock access have properly functioning riparian areas (Table 40). Nickel Creek is discussed under the spring/summer pastures, as it is the shared boundary between pastures 7 and 8. The functioning condition of Wilson Creek was not assessed.

Skunk and Jobe creeks are located in pasture 17 and both have perennial flows at their headwater springs. The segments of these streams that were assessed are in functioning at risk condition (Table 40). Castle Creek is located in pasture 13 and also is in functioning at risk condition (Map 4S). Streambanks of Skunk, Jobe, and Castle creeks lacked bank-stabilizing species and are inadequately vegetated to cover banks and dissipate the energy of high stream flows (Table 40). Young-aged willows are not present on Skunk and Jobe creeks. Water diversions likely impact riparian plant community composition and health on Castle Creek.

Table 40. Riparian Indicators and Functioning Condition Rating by Stream Segment, Summer Use pastures, Nickel Creek Allotment, 2002.

Riparian/Wetland Indicators:	BLM Stream Segment								
	Smith Cr 001	Smith Cr 003	Thomas Cr 001	Little Thomas 001	Little Thomas 002	Skunk Cr 001	Jobe Cr 001	Castle Cr 003	Castle Cr 004
diverse age class/structure of hydric vegetation (6)	y	y/n	y	y	y	n	n	y	y
diverse composition of hydric vegetation (7)	y	y	y	y	y	y	y	y	y
vegetation reflects maintenance of soil moisture (8)	y	y	y	y	y	y	y	y/n	y
plant community comprised of bank stabilizing species (9)	y	y/n	y/n	y/n	n	y/n	y/n	n	n
hydric vegetation exhibits high vigor (10)	y	n	n	y	n	y	y	n	n
adequate hydric vegetation cover to protect banks and dissipate energy (11)	y	n	n	y/n	n	n	n	n	n
adequate large woody material (12)	NA	NA	NA	NA	NA	NA	y	NA	NA
point bars revegetating with hydric species (14)	y	y	y	y	y	NA	NA	y	y
noxious weeds are not increasing	y	n	y	y	y	y	y	y	y
Overall functioning condition*	FAR	FAR	FAR	PFC	FAR	FAR	FAR	FAR	FAR
Stream miles	0.90	1.0	1.2	1.0	1.0	0.25	0.25	0.8	0.9
Riparian acres	4.4	5.9	5.6	4.0	4.2	un-known	un-known	2.5	3.3

(y=yes, n=no, y/n=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

Springs

Twenty-five springs are located on public land in pastures grazed during the summer with 15 springs located in pasture 7 (Table 41). No information was available on the condition of one spring. Of the other 24 springs, livestock grazing negatively impacted at least six in 1995-96. Riparian/wetland areas at these springs had >10% bare ground present and/or active erosion. In 2002, BLM assessed the functioning condition of 19 of the wetlands located at springs in these pastures. Four wetlands are in proper functioning condition and 15 are functioning at risk (Table 41). Functioning-at-risk wetlands have substantial areas of bare ground from pugging and shearing, occasionally have active headcuts, and vegetation composition is changed such that up to 25% of the plant cover is of undesirable plant species.

Table 41. Condition of wetland-riparian areas at springs located in pastures grazed during summer, Nickel Creek Allotment, 2002.

Spring Name	Location	Pasture No.	Percent Bare Ground	Functioning Condition ^a	Riparian Vegetation/Impacts from Livestock
Wilson Cr	11S04W02 NESW	7	15 - 1995 15 - 2002	FAR	willow/rose/juniper; slight use of vegetation by livestock on 7/24/95; in 2002, eroding banks from shearing
Buckaroo	11S04W03 NESE	7	10 - 1995 5-15 - 2002	FAR	willow/sedges/grasses; slight use of vegetation by livestock on 7/24/95; in 2002: 5-25% grass/forb cover; 5-15% area altered by pugging, trampling, shearing; active headcut
Yarrow	11S04W02 SWNE	7	0 - 1995 1-5 - 2002	PFC	aspen/willow/rose; 20% surface is boulders/bedrock; slight use of vegetation by livestock on 7/24/95; in 2002, 5-25% utilization by livestock, pugging/shearing at trail crossings
Unnamed	11S04W04 SWNE	7	<30 - 1995 1-5 - 2002	FAR	willow/sedges/grasses/currents; slight use of vegetation by livestock on 7/24/95; in 2002, 50-75% utilization of vegetation, 5-25% area vegetated with grasses/forbs
Unnamed	11S04W04 SWSW	7	0 - 1995 1-5 - 2002	PFC	willow/juniper/grasses; rocky substrate; slight use of vegetation by livestock on 7/24/95; in 2002, 5-15% utilization of shrubs
Unnamed	11S04W05 SWNE	7	5 - 1995 1-5 - 2002	FAR	willow/juniper/grasses/forbs/sedges; slight use of vegetation by livestock on 7/24/95; in 2002, 25-50% utilization of vegetation, 4-foot deep headcut and incised channel
Bill's	10S04W33 NWNE	7	0 - 1995 5-15 - 2002	FAR	sedges/grasses/iris; slight to no use of vegetation by livestock on 7/11/95; in 2002, 25-50% utilization of shrubs, pugging/shearing of 5-15% of area, active headcut
Unnamed	10S04W28 SWSW	7	0 - 1995 5-15 - 2002	FAR	aspen/willow/sedges/rushes/grasses; no use by livestock on 7/11/95; 50-75% utilization of vegetation in 2002, pugging/trampling on 5-15% of area
Unnamed	10S4W29 NESE	7	0 - 1995 <1 - 2002	PFC	willows/sedges/grasses/iris; no use by livestock on 7/10/95; in 2002, 5-25% utilization of willows
@ Joe's Folly	10S04W27 NESE	7	<5 - 1995 1-5 - 2002	FAR	aspen/willow/sedges/rushes; rocky substrate; low use of vegetation by livestock on 7/10/95; in 2002, 50-75% utilization by livestock, pugging/shearing of 1-5% of area
@ Joe's Folly	10S04W26 NWSW	7	0 - 1995 5-15 - 2002	FAR	aspen/willow/rose/sedges/rushes; no livestock use on 7/10/95; in 2002, 50-75% utilization by livestock, pugging/shearing of 5-15% of area
@ Rays Res.	10S04W28 NWNW	7	<5		willow/juniper/sedges/grasses; no use by livestock on 8/1/95
Unnamed	10S04W35 NESW	7	<5		willow/sedges/grasses; eroding streambank on channel below spring; no use by livestock on 7/18/96
Unnamed	10S04W35 SWSW	7	20 - 1995		willow/sedges/juniper/grass; pugging and shearing by livestock on 9/13/95
by Twin Res.	10S04W27 SWSE	7	0 - 1995 15-25 - 2002	FAR	willow/sedges/rushes/grasses; no use by livestock on 7/10/95; in 2002, 50-75% utilization, large headcuts present, pugging and shearing
Unnamed	11S04W14 NWSE	13	10		grasses/sedges; incised channel; no use by livestock on 6/14/95
Unnamed	11S04W23 NWNW	13	0 - 1995 >15 - 2002	FAR	sedges/camas/wyethia; large wet meadow; no use by livestock on 5/29/95; in 2002, earthen dam reservoir present, shearing, trampling, grasses dominate
Star Ranch	11S04W23 SESW	13	10 - 1995 10 - 2002	FAR	willow/sedges; developed spring - portion of wetland fenced to exclude livestock; no livestock use on 5/29/95; in 2002, 5-25% utilization outside of enclosure; pugging/trampling

Spring Name	Location	Pasture No.	Percent Bare Ground	Functioning Condition ^a	Riparian Vegetation/Impacts from Livestock
Unnamed	11S04W23 NESE	13	<5 - 1995 >15 - 2002	FAR	aspen/juniper/forbs; bare soil at spring; no livestock use on 6/14/95; in 2002, 50-75% utilization, pugging, no willow regeneration, 5-25% cover of undesirable plant spp.
Jobe Cr	11S03W30 SESW	17	<5 - 1995 1-5 - 2002	PFC	aspen/willow/juniper/sedges; trampling and soil compaction at meadow edge; no livestock use on 6/12/95; in 2002 5-25% utilization,
Jobe Cr	11S03W30 SWSW	17	<5 - 1995 5-15 - 2002	FAR	aspen/willow/juniper/sedges; large spring wetland; no livestock use on 6/12/95; in 2002, 25-50% utilization, pugging, shearing; 5-25% cover of undesirable plant spp.
Unnamed	11S03W30 SESW	17	<5		sedges/rushes/grasses (<i>Poa bulbosa</i>); no livestock use on 6/12/95
Unnamed	11S03W30 NWSW	17	<5 - 1995 5-15 - 2002	FAR	aspen/willow/juniper/sedges; large spring wetland; no livestock use on 6/12/95; in 2002, light utilization of willows, shearing; scotch thistle present
Unnamed	11S03W30 NENE	17			no information
Skunk Cr	11S04W25 SWNE	17	<5 - 1995 5-15 - 2002	FAR	willow/sedges/grasses/clover; no livestock use of riparian vegetation on 6/14/95; in 2002, low utilization of willows, no willow regeneration, pugging, shearing

^a From 2002 assessment: FAR = functional at risk, PFC = proper functioning condition, - = not assessed.

Trend

Riparian inventories and functioning condition assessments were conducted on Smith, Thomas, and Little Thomas creeks in 1997 and again in 1999. Trends in functioning condition, bank alteration, cover, and bank stability were generally static (Table 42). Segments of Little Thomas and Thomas creeks appeared to have upward trends in condition, whereas a segment of Smith Creek had a static to downward trend in condition (Table 42).

Table 42. Streambank parameters and stream functioning condition assessed in 1997 and 1999 on streams located in pasture 7 of the Nickel Creek Allotment.

Stream (segment)	Year	% Bank Altered ^a	% Bank with Deep Binding Roots ^a	% Unveg/stable ^a	% Veg/stable ^a	% Unveg/unstable ^a	% Veg/unstable ^a	Functioning Condition Rating ^b	Trend
Smith (001)	1997	0	>85	20	50	20	P	-	static
	1999	0	65-84	10	70	10	10	FAR	
Smith (002)	1997	50	35-64	10	60	10	20	-	static to downward
	1999	40	35-64	P	40	30	30	FAR	
Smith (003)	1997	50	35-64	10	60	10	20	-	static
	1999	20	35-64	P	60	20	20	FAR	
Thomas (001)	1997	50	35-64	10	50	10	30	FAR	static to upward
	1999	20	65-84	P	70	10	10	FAR	
Little Thomas (001)	1997	70	65-84	0	70	30	0	FAR	static to upward
	1999	10	65-84	10	70	10	10	PFC - low	
Little Thomas (002)	1997	T	35-64	0	60	10	30	FAR	static
	1999	20	65-84	10	60	20	10	FAR	

^a Ocular estimate where T = trace, P = 1 to 5%, 10 = 5 to 15%, 20 = 15 to 25%, 30 = 25-35%, 40 = 35 to 45%, 50 = 45 to 55%, 60 = 55 to 65%, 70 = 65 to 75%, 80 = 75% to 85%, 90 = 85 to 95%.

^b FAR = functional at risk, PFC = proper functioning condition, - = not assessed.

3.6.5 Standard 3: Stream Channel/Floodplain

Most stream channels (6.3 of 7.3 miles) located in pastures grazed in summer are functioning at risk. Riparian plant communities lack the vegetative cover and bank stabilizing species necessary for maintenance of stable channels and floodplains. Most channels and floodplains in these pastures are dependent on riparian vegetation for stability as they contain small amounts of rock.

Stream Inventories/Assessments

Many segments of Smith, Thomas, and Little Thomas creeks in pasture 7 are functioning at risk. Stream channels are over-widened and shallow relative to the landscape setting (Table 43). The lack of bank stabilizing-species allows high flows to scour streambanks and widen stream channels. The downstream most segment of Smith Creek (001) is negatively impacted by excessive deposition of sediment and fine gravels (from eroding banks on upstream segments that are in poor condition).

Skunk and Jobe creeks are also functioning at risk. Skunk Creek is vertically unstable and has 1.5-foot deep headcuts. The stream channel is also over-widened and shallow for the landform (Table 43). Jobe Creek has active headcuts up to three feet in depth and the channel is also wide and shallow for the landscape setting. Similarly, a portion of Castle Creek in pastures 13 and 17 (segment 003) is vertically unstable with active headcuts present. Castle Creek is over-widened and shallow in these pastures relative to the landscape setting (Table 43).

Table 43. Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment, Summer Use pastures, Nickel Creek Allotment, 2002.

Stream Channel/Floodplain Indicators:	BLM Stream Segment								
	Smith Cr 001	Smith Cr 003	Thomas Cr 001	Little Thomas 001	Little Thomas 002	Skunk Cr 001	Jobe Cr 001	Castle Cr 003	Castle Cr 004
floodplain inundated frequently (1)	y/n	y	y/n	y/n	y/n	y	y	y/n	y/n
beaver dams are active and stable (2)	NA	NA	NA	NA	NA	NA	NA	NA	NA
sinuosity, w/d ratio, gradient in balance with landscape setting (3)	y/n	n	n	y	n	n	n	n	n
riparian area is widening or has achieved potential extent (4)	y	n	y	y	y	n	n	n	y
upland watershed not contributing to riparian degradation (5)	y	y	y	y	y	y	y	y	y
floodplain and channel characteristics dissipate energy (13)	y	y	y	y	y	n	n	y	y
lateral stream movement associated with natural sinuosity (15)	y	y	y	y	y	y	NA	y	y
system is vertically stable (16)	y	y	n	y	y/n	n	y	y/n	y

Stream Channel/Floodplain Indicators:	BLM Stream Segment								
	Smith Cr 001	Smith Cr 003	Thomas Cr 001	Little Thomas 001	Little Thomas 002	Skunk Cr 001	Jobe Cr 001	Castle Cr 003	Castle Cr 004
no excessive erosion or deposition (17)	n	y	y	y	y	y	y	y	y
Overall functioning condition*	FAR	FAR	FAR	PFC	FAR	FAR	FAR	FAR	FAR
Stream miles	0.9	1.0	1.2	1.0	1.0	1.0	1.0	0.8	0.9
Riparian acres	4.4	5.9	5.6	4.0	4.2	unknown	unknown	2.5	3.3

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

3.6.6 Standard 4: Native Plant Communities

3.6.6.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Low sagebrush communities showed a slight-moderate departure from reference conditions. Decreaser grass cover is similar to reference conditions; however, Sandberg bluegrass cover is greater than expected in pastures 13 and 17 and juniper cover is greater than expected in pasture 7. Rock and gravel cover dominated sites 11S04W03 in pasture 7 and sites 11S04W14A and 11S04W14B in pasture 13. Gravel cover was a significant component at sites 11S04W28 in pasture 7, 11S04W23C in pasture 13, and 11S04W24A in pasture 17. Rock or gravel cover was a relatively minor component at site 11S03W30 in pasture 17.

Integrity/ Diversity - Plant community integrity and native species diversity show a none-slight degree of departure from reference conditions in pasture 17 and a slight-moderate degree of departure in pastures 7 and 13. Decreaser grasses (primarily Idaho fescue) are the primary grass component in pastures 7, 13 (11S04W14B) and 17. Sandberg bluegrass occurrence is greater than expected in pasture 13 (11S04W14A, 11S04W23C) and is the dominant grass at site 11S04W14A and is codominant at site 11S03W30 in pasture 17. Bluebunch wheatgrass occurs less than expected at all sites except pasture 13 (11S04W14B) and is absent from site 10S04W28 in pasture 7. Occurrence of bunchgrasses in shrub interspaces is less than expected in pastures 7 and 13 and as expected in pasture 17. Low sagebrush abundance is greater than expected at sites 10S04W28 in pasture 7 and 11S04W14A in pasture 13 and as expected at the remaining sites.

Biological soil crust cover is less than expected at most sites and soil crust cover is reduced or absent in shrub interspaces. Biological soil crust cover is not present at site 11S04W14A in pasture 13. Cheatgrass is present in low levels at site 11S04W14A in pasture 13 and in disturbed areas in pasture 17. Western juniper is a common in pasture 7, expanding from adjacent big sagebrush sites in pasture 13, and scattered in pasture 17. Annual production is within 80% of expected in pasture 17, site 11S04W14B in pasture 13, and at site 10S04W28 in pasture 7 where productivity comes primarily from shrubs and trees. Annual production is between 60-80% of expected at site 11S04W03 in pasture 7 and in pasture 13 (11S04W14A, 11S04W23C).

Perennial forb diversity is similar to reference conditions in all pastures. Leguminous species (lupine, milkvetch) are present in pastures 13 and 17 and are not apparent in pasture 7.

Plant Vigor - Plant vigor shows a none-slight degree of departure from reference conditions in pasture 17 and a slight-moderate degree of departure in pastures 7 and 13. Greater than expected crown die-off in Idaho fescue and Sandberg bluegrass is evident in pastures 7 and 13. Idaho fescue is in poor vigor at site 11S04W14A in pasture 13 and plucking mortality is occurring at site 10S04W28 in pasture 7. Some shrub mortality is occurring at sites 10S04W28 in pasture 7 and 11S04W23C in pasture 13 and in pasture 17. Pedestals are present at all sites and active in flow paths in pastures 7 and 13. Seed heads are present at all sites on bunchgrasses; however, they are not evident on Idaho fescue in interspaces at site 11S04W23C in pasture 13. Recruitment of bunchgrasses is occurring in pastures 7, 13 (11S04W14B), and 17 and is not evident in the remainder of pasture 13.

Noxious/Invasive Plants - Noxious weeds were not observed. Invasive plants show a none-slight degree of departure from reference areas in pastures 13 and 17 and a moderate degree of departure in pasture 7. Cheatgrass occurs in low levels at site 11S04W14A in pasture 13 and in disturbed areas in pasture 17. Cheatgrass is not present in pasture 7 and site 11S04W23C in pasture 13. Juniper is common in pasture 7, in low densities in pasture 13, and widely scattered and in adjacent big sagebrush sites in pasture 17.

Trend

All trend sites have moderate gravel cover and limited stone cover. The general trend in ecological condition was downward in pasture 7 where perennial grass frequencies decreased. The general trend in ecological condition was static to upward in pasture 13 where perennial grass frequencies increased and shrub frequencies were static or declining. The general trend in ecological condition in pasture 17 was static where increaser grass (squirreltail) and shrub cover increased.

NPFT Studies - In pasture 7, frequencies of Idaho fescue and Sandberg bluegrass declined between 1989 and 1998 and frequencies of the remaining grasses, longleaf phlox, and shrubs were static (Appendices M, N). In pasture 13, frequencies of Idaho fescue, Sandberg bluegrass, and squirreltail were static to increasing. Frequencies of bluebunch wheatgrass and longleaf phlox were static. Frequencies of low sagebrush were static to decreasing. In pasture 17, frequency of squirreltail increased and frequencies of the remaining grasses, longleaf phlox, and shrubs were static.

Photo Plots/ View Photos - The apparent trend was static for grasses and shrubs in pasture 7 (Table 44). The apparent trend was static for grasses and downward for shrubs in pasture 13. The apparent trend was static for grasses and upward for shrubs in pasture 17 where decadent/dead shrubs were replaced between 1989 and 1998.

Table 44. Standard 4: Native Plant Communities- Apparent trend in abundance (D = downward, S = static, U = upward) of perennial grasses and shrubs in photo plots and view photos, low sagebrush communities, pastures 7, 13, and 17, Nickel Creek Allotment, 1989-98.

Transect	Range Site	Evaluation Period	Grasses		Shrubs/ Trees	
			Plot	Photos	Plot	Photos
10S04W28	Shallow Claypan 12-16	1989-98	3.6.6.1.1	S	S	S
11S04W23A	Shallow Claypan 12-16	1991-98	S-U	S	U	S-D
11S04W23B	Shallow Claypan 12-16	1991-98	S-U	S	U	D
11S04W24	Shallow Claypan 12-16	1989-98	D	S-U	S	U

Shrub Density - Western juniper density was static at site 10S04W28 between 1989 and 1998 and common adjacent to the site. Juniper was not encountered at the remaining sites; however, it is common adjacent to sites in pasture 13 and is scattered adjacent to site 11S04W24 in pasture 17.

3.6.6.2 Big sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Big sagebrush communities showed a slight-moderate departure from reference conditions. Species diversity is similar to expected; however, interspatial bunchgrasses are reduced and shrub and juniper cover is not as expected in some areas.

Integrity/ Diversity - Plant community integrity and native species diversity show a slight-moderate degree of departure from reference conditions in Loamy 13-16 communities and a moderate degree of departure from reference conditions in Mahogany Savannah 12-16 communities. Species diversity is generally similar to reference sites; however, species composition is different from reference conditions at some sites. Rabbitbrush and juniper are a greater component than expected in areas where species composition departs from expected.

Overall occurrence of bunchgrasses is similar to reference conditions in big sagebrush and mountain mahogany communities. Idaho fescue occurrence is similar to reference conditions. Bluebunch wheatgrass cover is similar to reference sites in pasture 7 and below that of reference sites in pastures 13 and 17. Occurrence of bunchgrasses in shrub interspaces is less than expected in pastures 7 and 13 and similar to reference conditions in pasture 17. Big sagebrush and rabbitbrush occurrence is greater than expected at 10S04W21D in pasture 7 and similar to reference conditions at the remaining sites. Mountain mahogany cover is less than expected in pastures 7 and 13.

Biological soil crust cover is not a major component in these communities. Biological soil crust cover is reduced in shrub interspaces in pasture 13 and similar to reference conditions at the remaining sites. Cheatgrass is not evident in these pastures. Juniper is common to dominant. Annual production is within 80% of expected at all sites; however, juniper productivity is greater than expected. Observed forb diversity is similar to reference areas. Leguminous species were observed in big sagebrush communities, but not in mountain mahogany communities.

Plant Vigor - Plant vigor shows a slight-moderate degree of departure from reference conditions. Vigor is lowest in pasture 7 and highest in pasture 17; however, bluebunch wheatgrass is in low vigor in pasture 17. Crown die-out of bunch grasses is evident in pastures 7 and 13. Pedestals are present at most sites and some are active at site 11S04W23A in pasture 13. Mountain mahogany die-off is evident in pasture 7 where juniper trees are encroaching into mahogany stands. Seed heads are present on grasses occurring in interspaces and under shrub canopies in pastures 13 and 17, but not on grasses occurring in shrub interspaces in pasture 7. Recruitment of grasses is evident in all pastures.

Noxious/Invasive Plants - Small populations (<0.1 acre) of Scotch thistle and Canada thistle (*Cirsium arvense*) were observed adjacent to Star Ranch Spring (11S04W23) in pasture 13 between 1996 and 2001. Invasive plants show a slight-moderate degree of departure from reference conditions in pasture 17 and a moderate-extreme degree of departure in pastures 7 and 13. Cheatgrass is not evident. Rabbitbrush occurs at greater than expected levels at site 10S04W21D in pasture 7. Juniper is dominant in mahogany savannah communities in pastures 7 and 13. Juniper is common in big sagebrush communities.

Trend

The general trend in ecological condition was downward in pasture 7 where decreaser grasses decreased and rabbitbrush increased.

NPFT Studies - Frequencies of bluebunch wheatgrass and Idaho fescue were downward between 1983 and 1998 (Appendix M). Frequencies of Sandberg bluegrass and squirreltail were static.

Frequencies of long-leaf phlox and lupine were static in pasture 7 between 1983 and 1998 (Appendix N). Frequencies of big sagebrush and bitterbrush were downward and frequencies of rabbitbrush were static. A prescribed burn in 1984 removed the majority of sagebrush and bitterbrush plants and limited recruitment of these species occurred between 1984 and 1998.

Photo Plots/ View Photos - The apparent trend was static for grasses and static to upward for shrubs (Table 45). Shrub cover in 1998 was lower than before the 1984 prescribed burn; however, sagebrush and rabbitbrush cover increased between 1989 and 1998. The prescribed burn removed relatively small amounts of western juniper and there was no apparent change in juniper cover between 1984 and 1998.

Table 45. Apparent trend in abundance (D = downward, S = static, U = upward) of perennial grasses and shrubs in photo plots and view photos, big sagebrush communities, pasture 7, Nickel Creek Allotment, 1984-98.

Transect	Range Site	Evaluation Period	Grasses		Shrubs/ Trees	
			Plot	Photos	Plot	Photos
10S04W21B	Loamy 13-16	1984-98	S-U	S-D	S	S-U

Shrub Density - Western juniper was not encountered at site 10S04W21B; however, juniper is common adjacent to the site despite a 1984 prescribed burn.

3.6.6.3 Herbaceous (Burned/Treated) Communities

In September 1984, a 106-acre prescribed burn was conducted in pasture 7. A worksheet was conducted at 10S04W21D in the burn area. Rabbitbrush is abundant in the area and western juniper is common. Cover of bunchgrasses and biological soil crusts was reduced in the interspaces and the area received heavy livestock use in 2001. In 2000, a wildfire burned approximately 72 acres in the southeast portion of pasture 17. No worksheets were completed in this burn.

Approximately 130 acres of juniper woodland were clearcut between 1992 and 1996 in the northwest portion of pasture 7 (10S04W28, 10S04W29). Tree trunks were removed and branches were left.

3.6.7 Standard 8: Threatened and Endangered Plants and Animals

3.6.7.1 Redband Trout

Redband trout inhabit Smith, Thomas, and Little Thomas creeks in pasture 7. Trout are not known to inhabit Castle Creek in pastures 13 and 17. Most of Smith, Thomas, and Little Thomas creeks in pasture 7 (4.1 of 5.1 miles of stream) are in functioning at risk condition and providing unsuitable habitat for the maintenance of viable trout populations.

Livestock grazing was a significant factor affecting the cover, density, and composition of streamside vegetation on all three streams. Riparian areas that are easily accessed by livestock on these streams receive high levels of livestock use during the summer. As a result streambanks are inadequately vegetated to withstand the erosive forces of high stream flows and bank-stabilizing species are often lacking. Unstable streambanks and channels reduced the living space for redband trout and increased width/depth ratios. Wide, shallow stream channels and lack of streamside vegetation resulted in increased solar heating of streams such that temperatures exceeded state criteria for cold water biota in Smith and Thomas creeks.

One segment of Little Thomas Creek is located in a rocky, rugged canyon that restricts livestock access and is in proper functioning condition (PFC), but this segment is interspersed between segments that are functioning at risk. Thus, because stream temperatures and sediment levels are elevated basin-wide, the segment rated in PFC is likely providing only marginally suitable habitat for trout.

3.6.7.2 Wildlife

Riparian Habitat

Within summer use pastures, only 14 percent (1.0 miles) of the 7.3 miles of assessed stream riparian habitat are functioning properly while 86 percent (6.3 miles) are rated as functioning-at-risk. Of the three indicators that are most directly related to quality of habitat for most riparian dependant special status animals, 6) a diverse age class/structure of hydric vegetation occurs along most (5.8) stream miles, 7) a diverse composition of hydric vegetation is present along all (7.3) miles while 10) high vigor of hydric vegetation occurs along only 2.4 miles. Although not as directly tied to habitat suitability, most stream reaches do not contain adequate hydric

vegetation to protect streambanks and dissipate energy, which leaves these reaches at high risk of losing habitat to erosion during high flow events. Utilization levels have also been high within accessible stream reaches, which limits cover and forage for dependant species.

Twenty-four springs are also located in these pastures of which 19 were assessed for functioning condition. Five are functioning properly and expected to be providing at least marginally suitable habitat for most special status and other dependant animals while 15 are functioning-at-risk and likely not providing suitable habitat for at least some dependant species because of a loss of cover, structure, diversity and vigor of desirable vegetation, reduced water quality, and trampling of habitat and populations. No information is available for one spring.

Other Pertinent Riparian Habitat Information - Summer/hot season grazing is generally considered to be potentially the most detrimental to riparian habitats because livestock tend to concentrate and spend more time in these areas during this time of year in search of water, shade and succulent vegetation, all of which tend to be less available in the uplands. The results are often degraded habitat in the form of reduced forage and cover from excessive utilization and trampling of vegetation, reduced water quality, direct disturbance of special status species and other wildlife and, depending upon when livestock are removed, too little time for vegetation to complete significant regrowth for habitat recovery prior to the end of the growing season.

Sage Grouse Habitat Evaluations

Breeding Habitat - One breeding habitat evaluation was conducted in pasture 7 at 10S04W22. Six indicators are in the “suitable habitat” category and one indicator is in the “marginal habitat” category (Table 46). This evaluation was conducted in a mountain big sagebrush/Idaho fescue community at the extreme northern end of the pasture in an old burn. The burn resulted in an opening of approximately 100 acres within a landscape dominated by western juniper. A few widely scattered junipers are present within the site and both rabbitbrush and Sandberg bluegrass are relatively abundant. Idaho fescue is moderately grazed and has poor vigor while forb vigor and abundance is fair to good despite drought conditions. Even though all but one of the indicators fell within the suitable habitat category, this site and pasture were given an overall rating of “marginal habitat” due to the dominance of western juniper throughout the majority of this portion of the pasture and the dominance of low sage within much of the rest of the pasture.

Table 46. Sage Grouse Breeding Habitat Suitability, Pasture 7, Nickel Creek Allotment, 2001.

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Average Sagebrush Canopy Cover		X	
Average Sagebrush Height	X		
Sagebrush Growth Form	X		
Average Grass and Forb Height	X		
Average Perennial Grass Canopy Cover	X		
Average Forb Canopy Cover	X		
Preferred Forb Abundance and Diversity	X		
Overall Site Evaluation		X	

Brood-Rearing Habitat - Two late brood-rearing habitat evaluations were conducted in pasture 17. At 11S04W36, one indicator is in the “suitable habitat” category and three indicators are in the “marginal habitat” category (Table 47). This assessment was conducted at Dug Spring at the head of Skunk Creek and was given an overall rating of “marginal habitat” based on the presence of some upland vegetation within the riparian zone, evidence of some erosion and/or bare ground, and spotty distribution and limited availability of succulent forbs.

Table 47. Sage Grouse Late Brood-Rearing Habitat Suitability, 11S04W36 (A) and 11S04W30 (B) in pasture 17, Nickel Creek Allotment, 2001.

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Riparian and wet meadow plant community		A, B	
Riparian and wet meadow stability		A, B	
Forb availability	A	B	
Proximity of sagebrush cover	A, B		
Overall Riparian/Wet Meadow Site Evaluation		A, B	

At 11S03W30, two indicators are in the “suitable habitat” category and two are in the “marginal habitat” category. The assessment was conducted in a spring and wet meadow area at the head of Jobe Creek. Western juniper dominates the adjacent uplands and, while the spring and meadow support a healthy forb component, the site was given an overall rating of “marginal habitat” based primarily on the presence of some upland vegetation within the riparian zone and evidence of some erosion and/or bare ground.

General Upland Habitat Assessment

Sagebrush occurrence is higher than expected at three locations in these pastures and as expected at all other sites and, along with a diversity of other shrubs, is generally providing good woody cover, structure and forage for a diversity of neotropical migratory birds, sage grouse, pygmy rabbits, and other species throughout the majority of low and big sagebrush communities in these pastures. Where sagebrush occurrence is higher than expected it may be limiting herbaceous cover for ground nesting species to some extent but may also be providing additional protection for desirable grasses and additional woody cover and structure for a variety of other species.

Perennial forbs, a key forage component of sage grouse during the spring, summer and early fall, are similar to reference areas at all locations.

Idaho fescue is the dominant decreaser grass and its occurrence is comparable to reference sites throughout much of this area while bluebunch wheatgrass is generally less abundant than expected. Bunchgrass occurrence in shrub interspaces is also less than expected in pastures 7 and 13 and is likely to be limiting effective cover for ground nesting and foraging species such as sage grouse, northern harriers, some other neotropical migratory birds, and others, in these pastures, while providing mostly suitable cover in pasture 17. Plant vigor is also less than

throughout much of pastures 7 and 13 and likely to be limiting cover and forage for dependant species and their prey.

Western juniper is common to dominant in big sagebrush communities in all three pastures; in mountain mahogany communities in pastures 7 and 13; and in low sage communities in pasture 7. While providing important habitat for a number of special status and other species, juniper may be contributing to a gradual decline in habitat quality/suitability for sage grouse and, to a lesser extent, other sagebrush steppe obligates and other species in these areas.

3.6.7.3 Plants

During 2002, BLM visited the previously known occurrence of Mud Flat milkvetch in the north part of pasture 7 to assess its status. It was found to be healthy, vigorous, and with a large number of plants in the area. The other occurrence is in the south end of the pasture. Portions of it (one sub-population) have not been revisited since 1983 when it was originally observed. The other sub-population was observed in 1992 (Mancuso and Moseley 1993). Impacts to this population were either not recorded or none were observed during those visits. The status of the population at the south end of pasture 7 is unknown.

3.7 Fall Use (Pasture 10)

Summary

- watershed conditions are similar to reference conditions;
- 1.9 miles of stream are in proper functioning condition, 0.9 miles are in functioning at risk condition;
- upland vegetation conditions similar to reference conditions;
- sage grouse breeding habitat is marginal because of limited big sagebrush habitat.

3.7.1 Data Collection

One upland assessment was conducted in a low sagebrush community on July 26, 2001 (Table 48, Map 2N). One sage grouse breeding habitat evaluation was conducted in 2001 (Map 2N).

Table 48. Summary of upland data collected in the Fall Use pasture, Nickel Creek Allotment.

Data Type ¹	Location	Ecological Site	Condition/Trend ²
RHE	11S04W10	Shallow Claypan 12-16	+
SBH	11S04W16	Loamy 13-16	Marginal

¹ RHE – Rangeland Health Assessment, SBH – Sage Grouse Breeding Habitat Evaluation

² + = none-slight departure from reference conditions

3.7.2 Livestock Use

Use in pasture 10 generally occurred in late summer through October (Appendix F). Pasture 10 was not rested between 1986 and 2001.

With the exception of 1987, use occurred after the critical growth period for bunchgrasses.

Total actual use ranged between 30 AUMs in 1993 and 286 AUMs in 1996, and averaged 175 AUMs between 1996 and 2001 (Appendix F).

Upland utilization of perennial grasses was generally moderate between 1981 and 1997 (Appendix S). Utilization levels were similar for Idaho fescue and bluebunch wheatgrass. Utilization was greatest in the northern portion of the pasture, light-moderate in the southern portion, and slight-light in the western portion.

3.7.3 Standard 1: Watersheds

3.7.3.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a none-slight degree of departure from reference conditions for most indicators in pasture 10. Accelerated erosion is not present and watershed health is generally comparable to reference areas and site guides.

Hydrologic Function – The amount of surface flow patterns and associated pedestalled plants show a slight degree of departure from reference conditions. Historic activities are responsible for the majority of the observed pedestalling.

Soil Surface - The amount of bare ground and soil surface indicators have none-slight degrees of departure from reference conditions.

Vegetation Cover – The plant community, as it relates to watershed function, has a none-slight degree of departure from reference conditions. The balance of decreaser to increaser grasses and amount of shrub cover is as expected. Juniper occurs in low densities.

NPFT Data

No long-term trend sites were established in pasture 10.

3.7.3.2 Big sagebrush communities

No Worksheets or trend data were collected in big sagebrush communities in pasture 10.

3.7.4 Standard 2: Riparian Areas and Wetlands

Of 2.8 miles of stream located in the fall use pasture, 1.9 miles are in proper functioning condition. These segments of Smith and Little Smith Creek are densely vegetated with willows and the herbaceous understory is dominated by bank-stabilizing species such as Nebraska sedge (*Carex nebracensis*). Portions of these streams receive high levels of livestock use, but grazing is apparently late enough in the year such that riparian plants are able to store enough nutrients prior to grazing to maintain their vigor and cover.

Stream Inventories/Assessments

Little Smith Creek is densely vegetated with willows and other riparian shrubs in pasture 10 and is in proper functioning condition. The lower portion of Smith Creek in this pasture is also in proper functioning condition and is densely vegetated with willows with a herbaceous understory predominately vegetated with Nebraska sedge. The upper-most segment of Smith Creek in this pasture (segment 005) is in functioning at risk condition (Table 49). Streambanks are inadequately vegetated to protect them from the erosive energy of high flows and noxious weeds are present on this segment.

Table 49. Riparian Indicators and Functioning Condition Rating by Stream Segment, pasture 10, Nickel Creek Allotment, 2002.

Riparian/Wetland Indicators:	BLM Stream Segment		
	Little Smith 001	Smith Cr 004	Smith Cr 005
diverse age class/structure of hydric vegetation (6)	y	y	y
diverse composition of hydric vegetation (7)	y	y	y
vegetation reflects maintenance of soil moisture (8)	y	y	y
plant community comprised of bank stabilizing species (9)	y/n	y/n	y/n
hydric vegetation exhibits high vigor (10)	y	y	y/n
adequate hydric vegetation cover to protect banks and dissipate energy (11)	y	y	n
adequate large woody material (12)	NA	NA	NA
point bars revegetating with hydric species (14)	y	y	y
noxious weeds are not increasing	y	y	n
Overall functioning condition*	PFC	PFC	FAR
Stream miles	1.2	0.7	0.9
Riparian acres	10.5	10.6	5.6

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

Springs

No springs are present on public land in pasture 10.

Trend

Riparian inventories and functioning condition assessments were conducted on Smith and Little Smith creeks in 1997 and again in 1999. Trends in functioning condition, bank alteration, cover, and bank stability were static to upward for Smith Creek and upward on the portion of Little Smith Creek in pasture 10 (Table 50).

Table 50. Streambank parameters and stream functioning condition assessed in 1997 and again in 1999 on streams located in pasture 10 of the Nickel Creek Allotment.

Stream (segment)	Year	% Bank Altered ^a	% Bank with Deep Binding Roots ^a	% Unveg/stable ^a	% Veg/Stable ^a	% Unveg/unstable ^a	% Veg/unstable ^a	Functioning Condition Rating ^b	Trend
Smith (004)	1997	T	35-64	T	60	30	10	PFC	static to upward
	1999	10	65-84	0	80	10	10	PFC	
Smith (005)	1997	T	35-64	T	60	30	10	FAR	static
	1999	10	35-64	P	60	20	20	FAR	
Little Smith (001)	1997	30	35-64	0	50	20	30	FAR	upward
	1999	10	65-84	P	90	P	P	PFC	

^a Ocular estimate where T = trace, P = 1 to 5%, 10 = 5 to 15%, 20 = 15 to 25%, 30 = 25-35%, 40 = 35 to 45%, 50 = 45 to 55%, 60 = 55 to 65%, 70 = 65 to 75%, 80 = 75% to 85%, 90 = 85 to 95%.

^b FAR = functional at risk, PFC = proper functioning condition, - = not assessed.

3.7.5 Standard 3: Stream Channel/Floodplain

Stream channels in fall pastures are predominantly in proper functioning condition (1.9 of 2.8 miles of stream). One exception is the upper segment of Smith Creek in pasture 10. The channel on this segment is laterally and vertically unstable.

Stream Inventories/Assessments

Little Smith Creek is densely vegetated with willows and the stream channel and floodplain are stable and in balance with the landscape setting (Table 51). Similarly the lower portion of Smith Creek in this pasture (segment 004) has properly functioning stream channels and floodplains. However, the upper portion of Smith Creek in this pasture (segment 005) has weakly vegetated streambanks and the channel is laterally and vertically unstable (Table 51).

Table 51. Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment, early Spring Pastures, Nickel Creek Allotment, 2002.

Stream Channel/Floodplain Indicators:	BLM Stream Segment		
	Little Smith 001	Smith Cr 004	Smith Cr 005
floodplain inundated frequently (1)	y	y	y/n
beaver dams are active and stable (2)	NA	y	NA
sinuosity, w/d ratio, gradient in balance with landscape setting (3)	y	y	n
riparian area is widening or has achieved potential extent (4)	y	y	n
upland watershed not contributing to riparian degradation (5)	y	y	y
floodplain and channel characteristics dissipate energy (13)	y	y	y
lateral stream movement associated with natural sinuosity (15)	y	y	n
system is vertically stable (16)	y	y	n
no excessive erosion or deposition (17)	y	y	y

Stream Channel/Floodplain Indicators:	BLM Stream Segment		
	Little Smith 001	Smith Cr 004	Smith Cr 005
Overall functioning condition*	PFC	PFC	FAR
Stream miles	1.2	0.7	0.9
Riparian acres	10.5	10.6	5.6

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

3.7.6 Standard 4: Native Plant Communities

3.7.6.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Low sagebrush communities showed a none-slight departure from reference conditions. Most components are as expected except biological soil crust cover is reduced and low levels of cheatgrass and juniper are present. Rock and gravel cover are largely absent at the site.

Integrity/ Diversity - Plant community integrity and native species diversity show a none-slight degree of departure from reference. Idaho fescue and bluebunch wheatgrass are the primary grass components. Occurrence of bunchgrasses in shrub interspaces and sagebrush abundance are as expected.

Biological soil crust cover is less than expected and soil crust cover is reduced or absent in shrub interspaces. Cheatgrass and juniper are present in low levels. Annual production is within 80% of expected. Perennial forb diversity is below expected. Because most forbs had cured and were difficult to observe by mid-July 2001, timing may have influenced recorded forb diversity. Leguminous species are not apparent.

Plant Vigor - Plant vigor shows a none-slight degree of departure from reference conditions. Active pedestals are not apparent. Seed heads are present and recruitment of bunchgrasses is evident.

Noxious/Invasive Plants - Noxious weeds were not observed. Invasive plants show a slight-moderate degree of departure from reference areas. Cheatgrass occurs in low levels. Juniper occurs in low densities.

Trend

No long-term trend sites were established in pasture 10.

3.7.6.2 Big sagebrush communities

No Rangeland Health Evaluation Summary Worksheets or long-term trend plots were conducted in big sagebrush communities in pasture 10.

3.7.6.3 Herbaceous (Burned) Communities

No wildfires were recorded in pasture 10 between 1980 and present.

3.7.7 Standard 8: Threatened and Endangered Plants and Animals

3.7.7.1 Redband Trout

Both Smith and Little Smith creeks in pasture 10 have redband trout populations. Little Smith Creek is providing suitable habitat for redband trout as it is in proper functioning condition and densely vegetated with willows.

The lower portion of Smith Creek in pasture 10 is properly functioning and providing moderate quality habitat for redband trout. Stream temperatures in Smith Creek are elevated because of poor habitat conditions upstream, and cover and habitat complexity is reduced by high levels of livestock grazing. The upper 0.9 miles of Smith Creek in pasture 10 is functioning at risk and providing unsuitable habitat for redband trout. Streambanks are inadequately vegetated to protect them from the erosive energy of high flows. The channel is laterally and vertically unstable, reducing living space for trout. Wide, shallow stream channels and lack of streamside vegetation resulted in increased solar heating of Smith Creek such that temperatures exceeded state criteria for cold water biota.

3.7.7.2 Wildlife

Riparian Habitat

In pasture 10, 68 percent (1.9 miles) of the 2.8 miles of assessed stream riparian habitat are functioning properly while 32 percent (0.9 miles) are rated as functioning-at-risk. Two of the three indicators that are most directly related to quality of habitat for most riparian dependant special status animals are met along all 2.8 miles including. These include 6) a diverse age class/structure of hydric vegetation and 7) a diverse composition of hydric vegetation is present. The third indicator 10) high vigor of hydric vegetation, is met along Little Smith Creek, lower Smith Creek and only portions of upper Smith Creek. Both Little Smith and lower Smith Creek also contain adequate hydric vegetation to protect streambanks and dissipate energy (indicator 11) while upper Smith Creek does not and is at higher risk of losing habitat to erosion during high flow events. Utilization was very heavy on both herbaceous and woody riparian vegetation in 2001 and exceeded allowable limits in 2000 limiting cover and forage for dependant species in both years.

Other Pertinent Riparian Habitat Information - Fall grazing is often less destructive/disruptive to riparian habitats and dependant animal populations since temperatures

are typically milder and some greenup of upland vegetation may occur, encouraging livestock to spend more time in the uplands and less time in riparian areas. However, fall weather and greenup can vary significantly from year to year and conditions will often not be conducive to livestock dispersal away from riparian areas. This can lead to excessive utilization and trampling of vegetation with little if any time for significant regrowth and recovery of vegetation following livestock removal resulting in a lack of winter cover and streambanks that are vulnerable to erosion and habitat deterioration during high winter/spring runoff events.

Sage Grouse Habitat Evaluations

One breeding habitat assessment was conducted on state land in pasture 10 at 11S04W16. Four indicators are in the “suitable habitat” category, two indicators are in the “marginal habitat” category, and one indicator is in the “unsuitable habitat” category (Table 52). This evaluation was conducted in a small big sagebrush/antelope bitterbrush/Idaho fescue community in a landscape dominated by western juniper and/or low sagebrush. Perennial grass is abundant and vigorous and there is a good diversity and abundance of desirable forbs. This site was given an overall rating of “marginal habitat” primarily because of the low cover value for big sagebrush and very limited amount of potentially suitable big sagebrush nesting habitat within the site and the pasture as a whole.

Table 52. Sage Grouse Breeding Habitat Suitability, 11S04W16 in pasture 10, Nickel Creek Allotment, 2001.

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Average Sagebrush Canopy Cover			X
Average Sagebrush Height		X	
Sagebrush Growth Form	X		
Average Grass and Forb Height	X		
Average Perennial Grass Canopy Cover	X		
Average Forb Canopy Cover		X	
Preferred Forb Abundance and Diversity	X		
Overall Site Evaluation		X	

General Upland Habitat Assessment

Sagebrush occurrence is as expected within the pasture and is providing suitable woody cover, structure and forage for a diversity of neotropical migratory birds, sage grouse other species.

Perennial forb diversity is lower than at reference areas, but forbs were difficult to observe by mid-July when the assessment was completed and are likely to be providing at least marginally suitable forage and cover for sage grouse and other species.

Idaho fescue and bluebunch wheatgrass are the primary grass components in the pasture. Plant vigor is generally good, production is within 80% of expected, and seed heads are present resulting in habitat that should be adequate to provide for the needs of most species.

Western juniper occurs in low densities throughout the pasture and, while providing important habitat for a number of special status and other species, could eventually contribute to a gradual decline in habitat quality/suitability for sage grouse and, to a lesser extent, other sagebrush steppe obligates within the pasture.

3.7.7.3 Plants

Special status plants are not known from this pasture.

3.8 Standard 7: Water Quality – Nickel Creek Allotment (0548)

Monitoring of water temperatures in five streams in the Nickel Creek Allotment indicated that water temperatures in all of the streams exceeded State of Idaho criteria for support of the cold-water beneficial use. Although Current and Thomas Creeks did support the cold-water biota beneficial use in one out of the two years they were monitored. Intra-gravel flows and ground water recharge may have helped maintain cool water temperatures in these streams during years of low stream flows. The State of Idaho's draft Subbasin Assessment for the upper Owyhee River (Hydrologic Unit Code #17050104) concluded that water quality of Nickel, Castle, and Deep creeks is impaired and the streams are not fully supporting the cold-water biota beneficial use. Similarly, the Subbasin Assessment for the North and Middle Fork Owyhee Rivers found that water temperatures in the North Fork Owyhee River exceeded state standards and that the cold-water biota beneficial use is not being fully supported. No data was collected on bacteria concentrations to examine whether streams in the Nickel Creek Allotment supported primary and secondary contact recreation beneficial uses.

Temperature Monitoring

During 1997-2001, BLM monitored water temperatures in Castle, Current, Deep, Nickel, Smith, and Thomas creeks to evaluate whether these streams supported the cold-water biota beneficial use. DEQ conducted additional temperature and sediment monitoring to examine salmonid spawning and cold-water biota beneficial uses. All the streams monitored are tributaries to Deep or Nickel creeks and are located in the Upper Owyhee River watershed (Hydrologic Unit Code #17050104, Maps 4N, 4S).

DEQ reported in the draft Assessment for the Upper Owyhee River Subbasin (HUC #17050104) that the headwaters of Nickel Creek exceeded temperature criteria for salmonid spawning during June 1 through July 1, and that high sediment levels were impairing the cold-water biota beneficial use. This portion of Nickel Creek is located in pasture 3.

DEQ monitored water temperatures in Castle Creek just upstream of its confluence with Deep Creek, and reported in the draft Subbasin Assessment that the coldwater biota and salmonid spawning beneficial uses were not supported for Castle Creek. Water temperature in Castle Creek may have been influenced by a small reservoir located on the lower end of the stream in pasture 18 and by Star reservoir located in pasture 16A in the middle portion of the Castle Creek watershed.

Temperature monitoring by BLM indicated Smith Creek did not support the cold water biota beneficial use in pasture 7, but the cold water biota beneficial use was supported but threatened further upstream in pasture 10 (Table 53). Nickel and Current creeks did not support of the cold-water biota beneficial use in 2001, nor did Thomas Creek in 1997 (Table 53). However, Current Creek fully supported the cold-water biota beneficial use when monitored in 1997, as did Thomas Creek in 2001. Most of the flows in the lower elevation segments of Current and Thomas creeks subside underground during years with low winter snowpacks. In the years that these streams supported the cold-water biota use, BLM may have monitored water temperatures where intra-gravel flows were helping maintain cool water temperatures.

Livestock grazing from the Nickel Creek Allotment is authorized on less than one mile of Deep Creek. Water temperatures were monitored about 1 mile downstream of the portion of the stream that is accessible to livestock grazing in pasture 18, and the cold water biota beneficial use was not supported (Table 53). Water quality in Deep Creek is likely largely dependent on the land use practices on adjacent grazing allotments and private lands. However, water quality of Deep Creek is also influenced by the quality of inflows from major tributary streams (such as Nickel and Current creeks) that are located on the Nickel Creek allotment.

Unstable channels and floodplains of Deep and Current creeks caused by high bedloads of gravel resulted in wide and shallow stream channels that increased solar heating of the streams. Water temperatures were elevated in Castle, Current, Nickel, Smith, and Thomas creeks due to loss of stream shading provided by riparian shrubs. Additionally, streambank alteration caused by livestock (shearing, pugging, etc.) weakened the resistance of streambanks and floodplains to the erosive forces of high stream flows, resulting in increased stream widths and decreased depths, which further increased solar heating of Castle, Nickel, Smith, and Thomas creeks.

Table 53. Stream temperatures and evaluation of water quality criteria for the support of the cold water biota beneficial use (water temperatures of 22 °C or less with a maximum daily average of less than 19 °C), Nickel Creek Allotment, 1997-2001.

Stream (Pasture)	Location	Max. Temp. °C	Avg. Max. Temp °C	No. Days Sampled	Dates Sampled	Support Status
Current Cr (2)	10S03W08 SENW; above Mud Flat Rd crossing	24.9	22.2	57	6/26 - 8/21/01	Not Supported
Current Cr (2)	10S03W06 SE; above Mud Flat Rd crossing	18.5	17.2	48	7/15 - 8/31/97	Fully Supported
Nickel Cr (8,16A)	11S03W16 NWNE; downstream end of pastures 8/16A	29.1	25.2	48	6/26 - 8/12/01	Not Supported
Smith Cr (7)	11S04W11 SENW; above Grasshopper trail crossing	27.7	23.5	47	6/27 - 8/12/01	Not Supported
Smith Cr (10)	11S04W15 NENW; downstream of road crossing	23.7	21.1	47	7/16 - 8/31/97	Supported but Threatened
Thomas Cr (7)	11S04W10 SENW; at confluence with Smith Cr	18.6	16.2	48	6/26 - 8/13/01	Fully Supported
Thomas Cr (7)	11S04W09 SENE; downstream of road crossing	24.8	22.9	8	7/16 - 7/23/97	Not Supported
Deep Cr (18)	12S03W11 SESE; at road-crossing (in Allotment 0657, pasture 21)	24.5	22.4	33	7/30 - 8/31/99	Not Supported

Bacteria Monitoring

No data was collected on fecal coliform and *E. coli* bacteria concentrations to examine whether streams supported primary and secondary contact recreation beneficial uses.

3.9 Fenced Federal Range (Pastures 4, 6, 9, 11, 14, 19, 21, 24, 25)

Summary

- active pedestalling is more prevalent in low sagebrush communities, biological soil crusts are less than expected in most pastures;
- 1.3 miles of stream are in functioning at risk condition;
- decreaser grass cover is reduced, Sandberg bluegrass is increasing to dominant;
- Mud Flat milkvetch occurs in pasture 11, but the status is unknown.

3.9.1 Data Collection

Nine rangeland health evaluations were conducted in low (4) and big (5) sagebrush communities between July 16 and 25, 2001 (Table 54, Maps 2N, 2S).

Table 54. Summary of upland data collected in Fenced Federal Range pastures, Nickel Creek FFR Allotment.

Pasture	Data Type ¹	Location	Ecological Site	Condition/Trend ²
4	RHE	10S04W23B	Shallow Claypan 12-16	0-
9		10S04W29	Loamy 13-16	0
11		11S04W14C	Shallow Claypan 12-16	0-
14		11S04W13	Shallow Claypan 12-16	-
		11S03W18B	Shallow Claypan 12-16	+
19		12S03W03B	Loamy 11-13	+
21		12S03W15	Loamy 11-13	0+
24		12S03W29A	Loamy 11-13	0-
25		13S03W21	Loamy 11-13	0-

¹ RHE – Rangeland Health Assessment, NPFT – Nested Plot Frequency Transect, SBH – Sage Grouse Breeding Habitat Evaluation, SRRH – Sage Grouse Brood-Rearing Habitat Evaluation

² + = none-slight departure from reference conditions, 0 slight-moderate departure from reference conditions, - = moderate departure from reference conditions, -- = moderate-extreme departure from reference conditions

3.9.2 Livestock Use

Use records for the FFR pastures are inconsistent. Currently, use in pasture 25 generally occurs in spring, heifers are grazed in pastures 11 and 14 throughout the season, use in pasture 21 and 24 generally occurs during spring and summer, use in pasture 19 occurs in spring or late fall, use in pasture 9 occurs in late summer and fall, and use in pastures 4 and 6 generally occurs in the fall. Use records from 1988 and 1991 indicated spring use occurred in pastures 6, 9, 14, and 19.

The critical growth period for bunchgrasses in pasture 25 occurs from late May through mid June. Use prior to that period avoided the critical growth period. Season-long use in pasture 11 occurred during the critical growth period (late May through June). Fall use in the remaining pastures occurred after the critical growth period. Previous use that occurred during late May and June coincided with critical growth periods.

In November 1988, the grazing preference was set at a total of 109 AUMs for the FFR pastures. In 1998, total actual use for pasture 14 was 156 AUMs. Use data for other pastures and years are not available.

Upland utilization data was not collected in FFR pastures. Livestock use of riparian vegetation along Smith and Castle creeks in pastures 11 and 19 was heavy in 2001 (Table 55).

Table 55. Median stubble height and percent shrub utilization by livestock on stream segments located on public land within pastures of the Nickel Creek FFR Allotment, 2002.

Stream	Allotment (Pasture)	Site	Date	Median Stubble Height (inches)	Percent Shrub Utilization
Smith	0657 (11)	~200m upstream of downstream fence	10/10/01	2.0	100%
Castle	0657 (19)		10/10/01	2.0	

3.9.3 Standard 1: Watersheds

3.9.3.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a slight-moderate degree of departure from reference conditions for most indicators in summer use pastures. Accelerated erosion is present in all pastures and watershed health is not comparable to reference areas and site guides.

Hydrologic Function – The amount of surface flow patterns and associated pedestalled plants show a none-slight degree of departure from reference conditions in pasture 14 (11S03W18B), a slight-moderate degree of departure in pasture 4, and a moderate degree of departure in pastures 11 and 14 (11S04W13). Active pedestalling is apparent in all pastures and is most prevalent in pastures 4 and 14 (11S04W13). In pasture 11, pedestals are severe on sideslopes. In pastures 4 and 14 (11S04W13), pedestals and terracettes occur in interspaces and under shrub canopies. Historic activities are responsible for some of the observed pedestalling.

Soil Surface - The amount of bare ground has a none-slight degree of departure from reference conditions in pastures 11 and 14 (11S03W18B) and a slight-moderate degree of departure in pastures 4 and 14 (11S04W13). Surface gravels and rocks are protecting areas from more severe accelerated erosion in pastures 4 and 11. Bare ground areas in pasture 14 (11S04W13) are connected in many places.

Soil surface indicators have a none-slight degree of departure from reference conditions in pastures 11 and 14 (11S03W18B) and a moderate degree of departure in pastures 4 and 14

(11S04W13). There is a low occurrence of organic matter content in surface layers and the occurrence of physical soil crusting is greater than expected in pastures 4 and 14 (11S04W13). Weak soil surface structure, greater than expected soil surface loss, and lower than expected biological soil crust cover is evident in pastures in pastures 4, 11, and 14 (11S04W13).

Vegetation Cover – The plant community, as it relates to watershed function, has a none-slight degree of departure from reference conditions in pastures 11 and 14 (11S03W18B) and a slight-moderate degree of departure in pastures 4 and 14 (11S04W13). Occurrence of bunchgrasses in interspatial areas is less than expected in pastures 4, 11, and 14 (11S03W18B). There is an imbalance of increaser to decreaser grasses in pastures 4 and 14. Shrub cover is greater than expected in pastures 4 and 11. Juniper is common in pasture 14 (11S04W13) and becoming established in pasture 11.

NPFT Data

No long-term trend sites were established in FFR pastures.

3.9.3.2 Big sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a slight-moderate degree of departure from reference conditions for most indicators in summer use pastures. Accelerated erosion is present in all pastures and watershed health is not comparable to reference areas and site guides.

Hydrologic Function – The amount of surface flow patterns and associated pedestalled plants show a none-slight degree of departure from reference conditions in pasture 21, a slight-moderate degree of departure in pastures 19, 24, and 25, and a moderate degree of departure in pasture 9. Active pedestalling is apparent on mixed species, including shrubs, in pasture 9 and on side slopes in pasture 19. Historic activities are primarily responsible for the observed pedestalling in pastures 21, 24, and 25; however, limited active pedestalling is occurring in these pastures. Active terracettes are present in pasture 9 on side slopes.

Soil Surface - The amount of bare ground has a none-slight degree of departure from reference conditions in pastures 9, 19, and 25, a slight-moderate degree of departure in pasture 24, and a moderate degree of departure in pasture 21. Low levels of surface gravel provide limited protection from more severe accelerated erosion in pastures 24 and 25.

Soil surface indicators have a slight-moderate degree of departure in all pastures. A loss of surface horizon material, primarily from historic activity, is evident in pastures 9, 24, and 25. Physical soil crusts are apparent in all pastures. Weakened soil structure is apparent in pastures 21, 24, and 25. Organic matter is reduced in pastures 24 and 25. The occurrence of biological soil crusts in appropriate habitats is less than expected in pastures 19, 21, 24, and 25.

Vegetation Cover – The plant community, as it relates to watershed function, has a none-slight degree of departure from reference conditions in pastures 9 and 19 and a slight-moderate degree of departure in pastures 21, 24, and 25. Occurrence of bunchgrasses in interspatial areas is less than expected and there is an imbalance of increaser to decreaser grasses in pastures 21, 24, and

25. Low levels of cheatgrass are present in pastures 19, 21, 24, and 25. Shrub cover is greater than expected in pastures 24 and 25. Juniper cover is greater than expected in pasture 9.

NPFT Data

No long-term trend sites were established in FFR pastures.

3.9.4 Standard 2: Riparian Areas and Wetlands

Portions of Smith, Castle, and Deep creeks are located on public lands with pastures 6, 11, 19, and 21 totaling about 1.6 miles of stream. All segments that were evaluated for functioning condition are functioning at risk. Livestock use of riparian plant communities is the primary factor affecting the functioning condition of public land portions of Smith and Castle creeks in this allotment. High sediment delivery and deposition from upstream segments is the primary factor for the functioning at risk condition of Deep Creek in pasture 21.

Stream Inventories/Assessments

Pasture 6 – About 0.3 mile of Deep Creek is located on public land in this pasture. This portion of Deep Creek was not assessed for functioning condition. However, during a site visit to the stream segment in fall 2002, the season of grazing use and residual stubble height (> 10 inches) appeared appropriate for maintaining/improving riparian habitat condition

Pasture 11 - About 0.75 mile of Smith Creek is located on public land in this pasture. These segments of Smith Creek are in functioning at risk condition (Table 56). Streambanks are inadequately vegetated to withstand the erosive forces of high stream flows, and portions of these segments lack bank-stabilizing species.

Pasture 19 - This pasture is predominantly private land, but about 0.25 mile of Castle Creek is located on public land in this pasture. Livestock use of herbaceous riparian vegetation was high on this stream segment.

Pasture 21 - Approximately 0.3 mile of Deep Creek is located on public land in this pasture; with the stream apparently forming the border between pastures 21 and 22 for about 0.1 mile. On this segment of Deep Creek, willows dominate riparian plant communities and the riparian/wetland areas are functioning properly (Table 56).

Pasture 25 - This pasture is primarily made up of state and private land with about 0.25 mile of Porcupine Creek located on public land. This segment was not assessed for functioning condition and likely has ephemeral surface flows.

Table 56. Riparian Indicators and Functioning Condition Rating by Stream Segment, Nickel Creek FFR Allotment, 2002.

Riparian/Wetland Indicators:	BLM Stream Segment		
	Smith Cr 002a	Smith Cr 002b	Deep Cr 014 (016.8)
diverse age class/structure of hydric vegetation (6)	y	y	y
diverse composition of hydric vegetation (7)	y	y	y

Riparian/Wetland Indicators:	BLM Stream Segment		
	Smith Cr 002a	Smith Cr 002b	Deep Cr 014 (016.8)
vegetation reflects maintenance of soil moisture (8)	y	y	y
plant community comprised of bank stabilizing species (9)	n	n	y
hydric vegetation exhibits high vigor (10)	n	n	y
adequate hydric vegetation cover to protect banks and dissipate energy (11)	n	n	y
adequate large woody material (12)	NA	NA	NA
point bars revegetating with hydric species (14)	y	y	y
noxious weeds are not increasing	y	y	y
functioning condition*	FAR	FAR	FAR
stream miles	0.5	0.25	0.3
riparian acres	2.7	unknown	unknown

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment, Stream and Hydrologic Data form, Item 55

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning

Trend

No trend monitoring was conducted in FFR pastures.

3.9.5 Standard 3: Stream Channel/Floodplain

The 1.1 miles of stream on public land in this allotment that were assessed for functioning condition are functioning at risk. Excessive sediment delivery and deposition is impacting Smith and Deep creeks.

Stream Inventories/Assessments

Pasture 11 - Smith Creek is functioning at risk in this pasture (Table 57). The stream channel is wide and shallow relative to the landscape setting. Streambanks are inadequately vegetated to protect them from the erosive forces of high streams flows. Excessive sediment is being deposited in this reach that is likely coming from upstream segments that are in poor condition.

Pasture 21 - Approximately 0.3 mile of Deep Creek is functioning at risk (Table 57). High sediment delivery and deposition from upstream segments is negatively impacting this segment of Deep Creek.

Table 57. Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment, Nickel Creek FFR Allotment, 2002.

Stream Channel/Floodplain Indicators:	BLM Stream Segment		
	Smith Cr 002a	Smith Cr 002b	Deep Cr 014 (016.8)
floodplain inundated frequently (1)	y	y/n	y
beaver dams are active and stable (2)	NA	NA	NA
sinuosity, w/d ratio, gradient in balance with landscape setting (3)	n	n	y
riparian area is widening or has achieved potential extent (4)	n	n	y
upland watershed not contributing to riparian degradation (5)	y	y	y
floodplain and channel characteristics dissipate energy (13)	n	n	y
lateral stream movement associated with natural sinuosity (15)	y	y	y
system is vertically stable (16)	y	y	y
no excessive erosion or deposition (17)	n	y	n
Overall functioning condition*	FAR	FAR	FAR
Stream miles	0.5	0.25	0.3
Riparian acres	2.7	unknown	unknown

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

3.9.6 Standard 4: Native Plant Communities

3.9.6.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Low sagebrush communities showed a slight-moderate departure from reference conditions. Cover of decreaser and interspatial grasses and biological soil crusts are less than expected. Rock and gravel cover dominated sites in pastures 4 and 11 and was common in pasture 14.

Integrity/ Diversity - Plant community integrity and native species diversity show a slight-moderate degree of departure from reference conditions. Decreaser grass occurrence is less than expected at all sites. Bluebunch wheatgrass is absent from site 11S04W18B in pasture 14. Sandberg bluegrass occurrence is greater than expected in pastures 4 and 14. Occurrence of

bunchgrasses in shrub interspaces is less than expected. Low sagebrush abundance is greater than expected in pastures 4 and 11 and similar to expected in pasture 14.

Biological soil crust cover is less than expected at most sites and soil crust cover is reduced or absent in shrub interspaces. Cheatgrass is present in low levels in pastures 4 and 14. Western juniper is expanding from adjacent big sagebrush sites in pastures 4 and 11 and site 11S04W13 in pasture 14. Juniper does not occur at site 11S03W18B in pasture 14; however, it does occur in adjacent big sagebrush sites. Annual production is within 80% of expected in all pastures except at site 11S04W13 in pasture 14 where production is 60-80% of expected because of reduced productivity from bunchgrasses. Perennial forb diversity is similar to reference conditions in all pastures except for pasture 4 where forbs were difficult to identify because of the timing of the survey. Leguminous species (lupine) are present in pastures 11 and 14 and are not apparent in pasture 4.

Plant Vigor - Plant vigor shows none-slight degree of departure from reference conditions in pastures 4 and 11 and a slight-moderate degree of departure in pasture 14. In pasture 11, bunchgrasses in interspaces are in poor vigor. Low vigor and densities of bunchgrasses are evident at site 11S04W13 in pasture 14. Pedestals are present at all sites and active at site 11S04W13 in pasture 14. Seed heads are present at all sites on bunchgrasses; however, they are not evident on decreaser grasses at site 11S04W13 in pasture 14 and are evident only on grasses under shrubs in pasture 11. Recruitment of bunchgrasses is evident in pasture 4 and at site 11S03W18B in pasture 14. Recruitment of bunchgrasses is not evident in pasture 11 and at site 11S04W13 in pasture 14.

Noxious/Invasive Plants - In August 2001, a small population (0.1 acres) of Russian knapweed (*Acroptilon repens*) was observed in pasture 14 in 11S04W13 near Star Reservoir. Noxious weeds were not observed in pastures 4 and 11. Invasive plants show a none-slight degree of departure from reference areas in pasture 11 and a moderate degree of departure in pastures 4 and 14. Cheatgrass occurs in low levels in pastures 4 and 14 and is not present in pasture 11. Juniper is common at site 11S04W13 in pasture 14, widely scattered at site 11S03W18B in pasture 14, and encroaching in pastures 4 and 11.

Trend

Long-term trend sites were not established in FFR pastures.

3.9.6.2 Big sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Big sagebrush communities showed a slight-moderate departure from reference conditions. Sandberg bluegrass and rabbitbrush occurrence is greater than expected. Biological soil crusts are reduced or absent.

Integrity/ Diversity - Plant community integrity and native species diversity show a slight-moderate degree of departure from reference conditions in pastures 9, 19, and 21 and a moderate degree of departure from reference conditions in pastures 24 and 25. Species diversity is generally similar to reference sites; however, species composition is different from reference conditions at most sites. Sandberg bluegrass and rabbitbrush are a greater component than expected in areas where species composition departs from expected.

In pasture 9, Idaho fescue occurs as expected; however, bluebunch wheatgrass occurrence is less than expected and Sandberg bluegrass occurrence is greater than expected. In the remaining pastures, Sandberg bluegrass is the dominant understory bunchgrass and occurrence of bluebunch wheatgrass is below expected in pastures 21, 24, and 25 and does not occur in pasture 19. Occurrence of bunchgrasses, especially decreaser grasses, in shrub interspaces is less than expected in pastures 19, 21, 24, and 25 and similar to reference conditions in pasture 9. Big sagebrush and rabbitbrush occurrence is greater than expected in pastures 24 and 25 and similar to reference conditions in the remaining pastures. Juniper occurrence is greater than expected in pasture 9.

Biological soil crust cover is similar to reference conditions in pasture 9. Biological soil crust cover is reduced or nonexistent in shrub interspaces in pastures 19, 21, 24, and 25. Cheatgrass is present in relatively low levels in all pastures except pasture 9 where it is not evident. Juniper is becoming common in pasture 9 and is rare in the remaining pastures. Annual production is within 80% of expected at all sites; however, juniper productivity is greater than expected in pasture 9 and Sandberg bluegrass and shrub productivity is greater than expected in the remaining pastures. Observed forb diversity is similar to reference areas in pastures 9, 19, 21, and 25. Observed forb diversity is below expected in pasture 24; however, forbs were difficult to distinguish because sampling occurred after the growth period. Arrowleaf balsamroot is absent from all Loamy 11-13 sites. Leguminous species (lupine, milkvetch) were observed in pastures 9, 19, and 25, but not in pastures 21 and 24.

Plant Vigor - Plant vigor shows a none-slight degree of departure from reference conditions. Crown die-out of bunch grasses is evident in pastures 9, 24, and 25. Some shrub mortality related to insects is evident in pasture 25. Pedestals are present in all pastures and to a limited extent are active in pastures 9, 19, and 24. Seed heads are present on grasses occurring in interspaces and under shrub canopies in pastures 9, 19, 24, and 25, but not on grasses occurring in shrub interspaces in pasture 21. Recruitment of grasses and shrubs is evident in pasture 19.

Noxious/Invasive Plants - Noxious weeds were not observed. Invasive plants show a none-slight degree of departure from reference conditions in pastures 19 and 21 where cheatgrass occurs in relatively low frequencies and juniper is widely scattered. Invasive plants show a moderate degree of departure from reference conditions in pastures 9, 24, and 25. Juniper is common in pasture 9 and sparse in pastures 24 and 25. Cheatgrass is scattered in pastures 24 and 25. Rabbitbrush occurs at greater than expected levels in pastures 24 and 25.

Trend

Long-term trend sites were not established in FFR pastures.

3.9.6.3 Herbaceous (Burned) Communities

In 1999, a wildfire burned approximately 305 acres in the eastern portion of pasture 11. In 1986, a wildfire burned approximately 288 acres in the northern portion of pasture 25. This burn occurred on state and private lands. No worksheets were completed in these burns.

3.9.7 Standard 7: Water Quality

Monitoring of water temperatures in Castle, Deep, and Smith creeks indicated that water temperatures in all three streams in the Nickel Creek FFR Allotment exceeded State of Idaho

criteria for support of the cold-water beneficial use. The State of Idaho's draft Subbasin Assessment for the upper Owyhee River (Hydrologic Unit Code #17050104) concluded water quality of Castle and Deep creeks is impaired and the streams are not fully supporting the cold-water biota beneficial use. No data was collected on bacteria concentrations to examine whether streams in the Nickel Creek FFR Allotment supported primary and secondary contact recreation beneficial uses.

Beneficial Uses

All streams in the Nickel Creek FFR Allotment have general use designations for secondary contact recreation, agricultural water supply, wildlife habitat, and aesthetics. Castle, Deep, and Smith creeks support populations of redband trout in segments located on public land in the Nickel Creek FFR Allotment. Thus, cold-water biota and salmonid spawning are additional beneficial uses of these streams.

Castle and Deep creeks are on the State of Idaho, Division of Environmental Quality's (DEQ) 303(d) list of water quality limited stream segments. These streams were listed in 1998 as water quality impaired for their entire length. Deep and Castle creeks are listed as water quality impaired because of elevated water temperatures and sediment levels.

Temperature Monitoring

During 1997-2001, BLM monitored water temperatures in Deep and Smith creeks to evaluate whether these streams supported the cold-water biota beneficial use. DEQ conducted additional temperature and sediment monitoring on Castle Creek to examine salmonid spawning and cold-water biota beneficial uses. All the streams monitored are tributaries to Deep or Nickel creeks and are located in the Upper Owyhee River watershed (Hydrologic Unit Code #17050104, Maps 4N, 4S).

DEQ reported in the draft Assessment for the Upper Owyhee River Subbasin (HUC #17050104) that the coldwater biota and salmonid spawning beneficial uses are not supported for Castle Creek. Water temperature in Castle Creek may have been influenced by a small reservoir located on the lower end of the stream in pasture 18 and by Star reservoir located in pasture 16A in the middle portion of the Castle Creek watershed.

Temperature monitoring by BLM indicated Smith Creek did not support the cold water biota beneficial use in pasture 11 of the Nickel Creek FFR Allotment as water temperatures were elevated both downstream and upstream of pasture 11 (Table 58).

Water temperatures were monitored in Deep Creek in pasture 21, and the cold-water biota beneficial use was not supported (Table 58). Water quality in Deep Creek is likely largely dependent on the land use practices on adjacent grazing allotments and private lands.

Unstable channels and floodplains of Deep Creek caused by a high bedloads of gravel resulted in wide and shallow stream channels that increased solar heating of the streams. Water temperatures were elevated in Castle and Smith creeks due to loss of stream shading provided by riparian shrubs. Additionally, streambank alteration caused by livestock (shearing, pugging, etc.)

weakened the resistance of streambanks and floodplains to the erosive forces of high stream flows, resulting in increased stream widths and decreased depths, which further increased solar heating of Castle and Smith Creeks.

Table 58. Stream temperatures and evaluation of water quality criteria for the support of the cold water biota beneficial use (water temperatures of 22 °C or less with a maximum daily average of less than 19 °C), Nickel Creek Allotment, 1997-2001.

Stream (Allotment, Pasture)	Location	Max. Temp. °C	Avg. Max. Temp °C	No. Days Sampled	Dates Sampled	Support Status
Smith Cr (0548,7)	11S04W11 SENW; above Grasshopper trail crossing	27.7	23.5	47	6/27 - 8/12/01	Not Supported
Smith Cr (0548, 10)	11S04W15 NENW; downstream of road crossing	23.7	21.1	47	7/16 - 8/31/97	Supported but Threatened
Deep Cr (0657, 21)	12S03W11 SESE; at road-crossing	24.5	22.4	33	7/30 - 8/31/99	Not Supported

Bacteria Monitoring

No data was collected on fecal coliform and *E. coli* bacteria concentrations to examine whether streams supported primary and secondary contact recreation beneficial uses.

3.9.8 Standard 8: Threatened and Endangered Plants and Animals

3.9.8.1 Redband Trout

Redband Trout Habitat Assessments

Pastures 11, 19, 21 - Redband trout inhabit Castle Creek in pasture 19, Deep Creek in pasture 21, and Smith Creek in pasture 11. All stream segments inhabited by redband trout in these pastures are functioning at risk and as a result are not providing suitable habitat for the maintenance of viable trout populations.

Habitat conditions are poor because riparian plant communities on these streams lack late-seral plant species necessary to maintain stable streambanks, and channels. Width and depth ratios are not in balance with surrounding landscapes, and floodplain and channel characteristics are inadequate for dissipating energy of high flows. Unstable streambanks and channels reduced the living space for redband trout. The large width/depth ratios of the channels, and lack of streamside vegetation increased solar heating of the streams such that temperatures exceeded state criteria for cold-water biota in Castle, Deep, and Smith creeks.

Livestock grazing is a significant factor affecting cover, vigor, density, and composition of streamside vegetation on Castle and Smith creeks. Deep Creek is currently providing unsuitable trout habitat because of past impacts (i.e. sediment delivery from upstream segments in poor condition) rather than as a result of current livestock management.

3.9.8.2 Wildlife

Riparian Habitat

There are a total of about 1.3 miles of stream riparian habitat within FFR pastures, 11, 19, 21 and 25. Of these, 1.05 miles were assessed for functioning condition and all were rated as functioning-at-risk. Although all of the assessed stream reaches support a diverse age class/structure and diverse composition of riparian vegetation and are likely providing at least marginally suitable habitat for most dependant special status species, 0.75 miles along Smith Creek in pasture 11 do not support adequate hydric vegetation to protect or stabilize streambanks which puts them at risk of erosion and habitat loss during high flows. Riparian vegetation along these reaches is also lacking in vigor. The remaining 0.3 miles of stream riparian habitat along Deep Creek in pasture 21 is adequate to provide for the needs of most dependant special status and other animals but carries a high sediment load which may affect the quality of spawning habitat for redband trout.

General Upland Habitat Assessment

Sagebrush occurrence is as expected or greater than expected in all pastures and is providing adequate woody cover, structure and forage for a diversity of neotropical migratory birds, sage grouse other species.

Perennial forbs are similar to reference areas at all but one of the low sagebrush sites and one of the big sagebrush sites. The lack of forbs at the two locations may have been due to the fact that assessments were conducted late in the season when forbs were difficult to distinguish. It appears that forbs are generally adequate to provide for the needs of sage grouse and other species.

Decreaser grass species are less than expected in all pastures except pasture 9. Bluebunch wheatgrass is completely absent from low sagebrush communities in pasture 14 and big sagebrush communities in pasture 19. The lower than expected occurrence of desirable bunchgrasses, especially bluebunch wheatgrass, throughout most of these pastures is likely to be limiting effective cover for ground nesting and foraging species such as sage grouse, northern harriers, some neotropical migratory birds, and others. Reduced plant vigor at some locations, especially with low sagebrush sites in pastures 11 and 14 is also likely to be contributing to reduced cover and forage production and quality for dependant special status species.

The occurrence of western juniper is generally low throughout most of these pastures but is common in at least one site and scattered at others and while providing important habitat for a number of special status and other species, it may be contributing to the decline of habitat quality/suitability for sage grouse and, to a lesser extent, other sagebrush steppe obligates within these pastures.

3.9.8.3 Plants

Mud Flat milkvetch was reported in pasture 11 in 1992. At that time, impacts were either not recorded or none were observed. There is no data for this occurrence and its status is unknown.

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5.0 Appendices

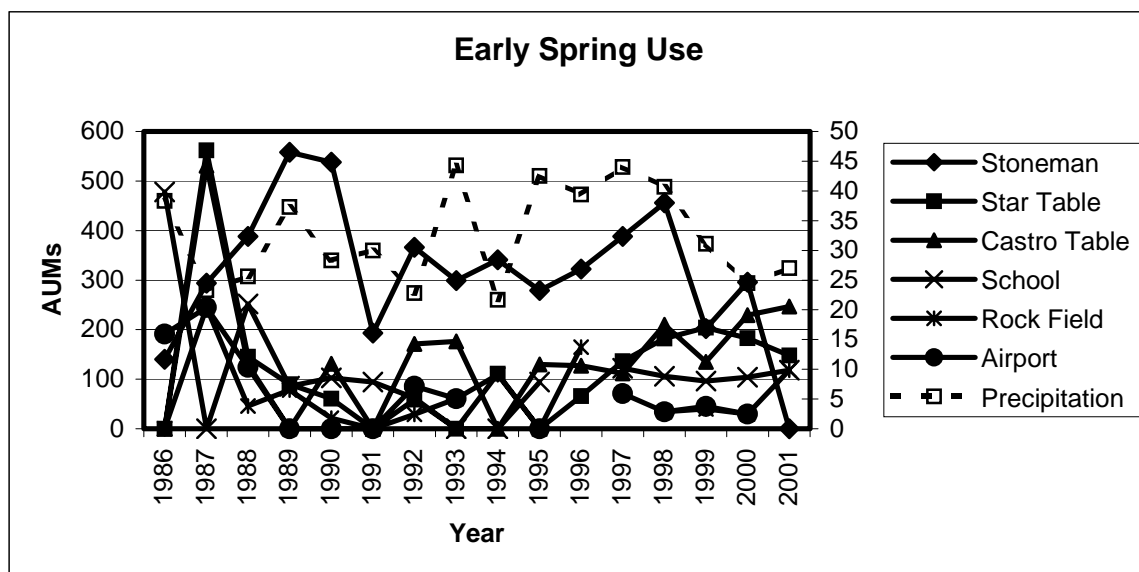
Appendix A. Special Status animal species and habitat associations for Nickel Creek and Nickel Creek FFR Allotments.

Species	Status	Key Habitat Associations Within West Antelope and Miller FFR Allotments
American Bald Eagle (<i>Haliaeetus eucocephalus</i>)	T	Riparian and adjacent upland habitats
Prairie Falcon (<i>Falco mexicanus</i>)	S	Cliff/canyon, big sagebrush, low sagebrush
Ferruginous Hawk (<i>Buteo regalis</i>)	S	Cliff, rock outcrop, open juniper, big sagebrush, low sagebrush
Northern Harrier (<i>Circus cyaneus</i>)	S	Big sagebrush, low sagebrush, meadow
Sage Grouse (<i>Centrocercus urophasianus</i>)	S	Big sagebrush, low sagebrush, meadow, riparian
Burrowing Owl (<i>Athene cunicularia</i>)	S	Various open or disturbed habitats
Yellow-billed Cuckoo (<i>Coccyzus erythrophthalmus</i>)	C	Woody Riparian (not confirmed)
Calliope Hummingbird (<i>Stellula calliope</i>)	S	Woody riparian, big sagebrush, mountain shrub
Rufous Hummingbird (<i>Selasphorus rufus</i>)	S	Juniper, big sagebrush, mountain shrub, meadow
Dusky Flycatcher (<i>Empidonax oberholseri</i>)	S	Juniper, big sagebrush, mountain shrub, woody riparian
Gray flycatcher (<i>Empidonax wrightii</i>)	S	Juniper, big sagebrush, mountain shrub, woody riparian
Willow Flycatcher (<i>Empidonax trailii</i>)	S	Woody riparian, mountain shrub, juniper, big sagebrush
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	S, SSC	Big sagebrush, open juniper
Swainson's Thrush (<i>Catharus ustulatus</i>)	S	Woody riparian
Yellow Warbler (<i>Dendroica petechia</i>)	S	Woody riparian, mountain shrub
Black-throated Gray Warbler (<i>Dendroica nigrescens</i>)	S	Juniper, big sagebrush
MacGillivray's Warbler (<i>Oporornis tolmiei</i>)	S	Woody riparian, mountain shrub big sagebrush
Wilson's Warbler (<i>Wilsonia pusilla</i>)	S	Riparian
Yellow-headed Blackbird (<i>Xanthocephalus xanthocephalus</i>)	S	Wetlands, riparian
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	S	Open grassland
Brewer's Sparrow (<i>Spizella breweri</i>)	S	Big sagebrush
Sage Sparrow (<i>Amphispiza belli</i>)	S	Big sagebrush
Green-tailed Towhee (<i>Pipilo chlorurus</i>)	S	Big sagebrush, mountain shrub, riparian

Species	Status	Key Habitat Associations Within West Antelope and Miller FFR Allotments
Preble's Shrew (<i>Sorex preblei</i>)	SSC	Riparian
Spotted Bat (<i>Euderma maculatum</i>)	S, SSC	Roosting/hibernation: Cliffs, canyons, rock outcrops Foraging: Juniper, sagebrush
Small-footed Myotis (<i>Myotis ciliolabrum</i>)	S	Roosting/hibernation: Caves, rock crevices, trees Foraging: Cliffs, rocky slopes
Long-eared Myotis (<i>Myotis evotis</i>)	S	Roosting/hibernation: Trees, caves Foraging: Wetland/riparian, juniper, sagebrush
Long-legged Myotis (<i>Myotis volans</i>)	S	Roosting/hibernation: Rock outcrops, trees Foraging: juniper, wetland/ riparian
Yuma Myotis (<i>Myotis yumanensis</i>)	S	Roosting/hibernation: Caves, rock outcrops Foraging: Wetland/riparian, sagebrush, juniper
Townsend's Big-eared Bat (<i>Plecotus townsendii</i>)	S, SSC	Roosting/hibernation: Caves, trees. Foraging: Juniper, sagebrush, canyon.
Western Pipistrelle (<i>Pipistrellus hesperus</i>)	SSC	Roosting/hibernation: Caves, rock outcrops, burrows near water Foraging: Juniper, sagebrush, canyon
Pygmy Rabbit (<i>Brachylagus idahoensis</i>)	S, SSC	Big sagebrush.
Columbia Spotted Frog (<i>Rana luteiventris</i>)	C	Aquatic/riparian
Western Toad (<i>Bufo boreas</i>)	S, SSC	Wetland/riparian, all upland habitats
Redband Trout (<i>Oncorhynchus mykiss gibbsi</i>)	S, SSC	Aquatic

SSC = State of Idaho Species of Special Concern, S = BLM Sensitive Species, C = Federal Candidate Species for Listing as Threatened or Endangered, T = Federal Threatened Species

Early Spring																		
Pasture	Stoneman			Castro Table			Star Table			School			Rock Field			Airport		
	2			16B			16A			20			22			23		
Year	AUMs	# LVST	Use Period	AUMs	# LVST	Use Period	AUMs	# LVST	Use Period	AUMs	# LVST	Use Period	AUMs	# LVST	Use Period	AUMs	# LVST	Use Period
1986	140	94	8/14-10/4	0		REST	0		REST	478	1226	4/4-4/18	0		REST	191	131	4/26-6/20
1987	294	257	8/1-9/10	531	405	4/11-5/28	562	343	5/29-7/28	0		REST	245	304	6/15-7/15	245	304	6/15-7/15
1988	388	565	10/12-11/4	130	398	6/16-6/27	145	465	6/24-7/8	252	249	3/21-5/7	46	48-448***	6/14-8/1	124	43-396****	3/25-5/5
1989	558	482	9/14-11/4	0		REST	90	94	6/1-7/5	86	271-458	4/1-5/7	78	520***	5/3-5/25	0		REST
1990	538	585-783	10/3-10/31	131	150	5/16-6/16	61	150	6/17-7/1	103	120	4/11-5/21	21	50	6/5-6/20	0		REST
1991	193	250	10/5-10-31	0		REST	0		REST	94	120	5/4-6/2	0		REST	0		REST
1992	366	100-200	7/15-9/12	171	125	6/7-7/26	59	75	6/5-7/3	62	100	4/15-5/18	29	25	4/15-5/28	86	75	4/15-5/28
1993	299	275	9/24-10/31	176	174	6/28-8/3	0		REST	0		REST	61	50	4/26-6/11	61	50	4/26-6/11
1994	341	90-210	7/10-9/15	0		REST	111	53	4/15-6/30	0		REST	109	200	6/16-7/6			6/15-7/10
1995	279	300	4/15-5/17	130	148	4/18-5/19	0		REST	94	130	4/1-5/8*	0		REST	0		REST
1996	322	275	4/15-5/25	127	150	4/25-5/25	66	150	5/26-6/10		335	4/10-4/25	165	*	4/10-4/25		334	4/10-4/25
1997	388	335	4/15-5/24	112	143	5/22-6/17	136	138	4/18-5/21	122	300	4/2-4/15		175**	4/2-4/15	71	175	4/2-4/15
1998	456	350	4/15-5/29	210	79	4/15-7/15	182	150	4/20-5/31	106	245	4/5-4/19	34	65	4/2-4/18	34	65	4/2-4/15
1999	202	250	4/17-5/14	135	130	7/1-8/5	204	150	4/15-5/31	96	300	4/5-4/15	40	125	4/5-4/15	45	130	4/5-4/16
2000	296	225	4/15-5/25	229	145	4/15-6/12	183	150	4/22-5/29	104	183-202	4/2-4/17	30	75	4/6-4/17	30	75	4/6-4/17
2001	0		REST	247	100	6/16-8/30	148	150	4/15-5/15	118	80	4/1-5/15	118	80	4/1-5/15			REST?



Year	Total AUMs
1986	809
1987	1877
1988	1085
1989	812
1990	854
1991	287
1992	773
1993	597
1994	561
1995	503
1996	680
1997	829
1998	1022
1999	722
2000	872
2001	631

* combined 20, 22 and 23

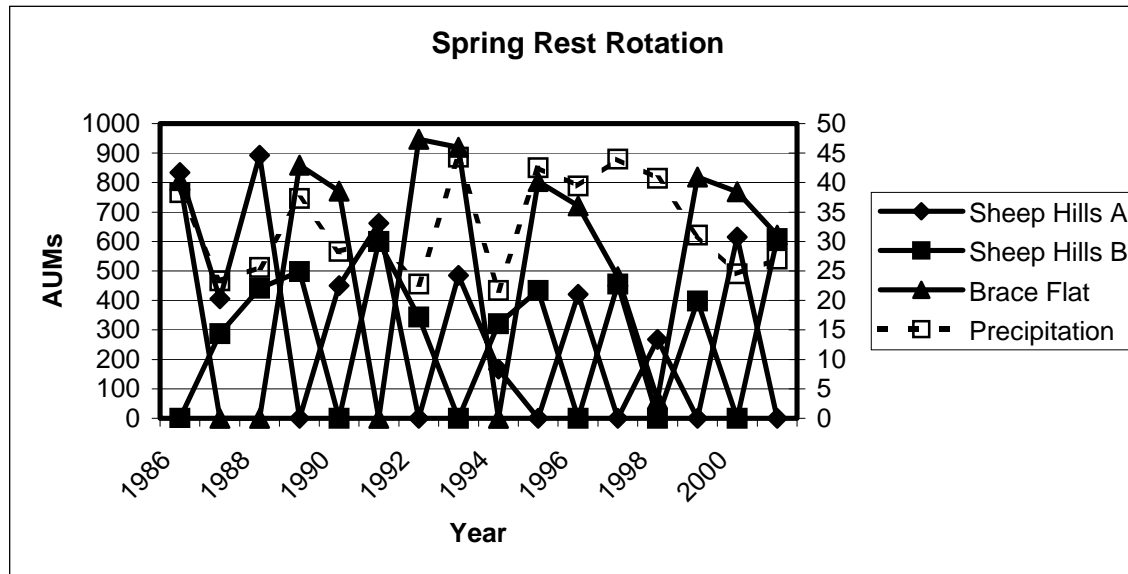
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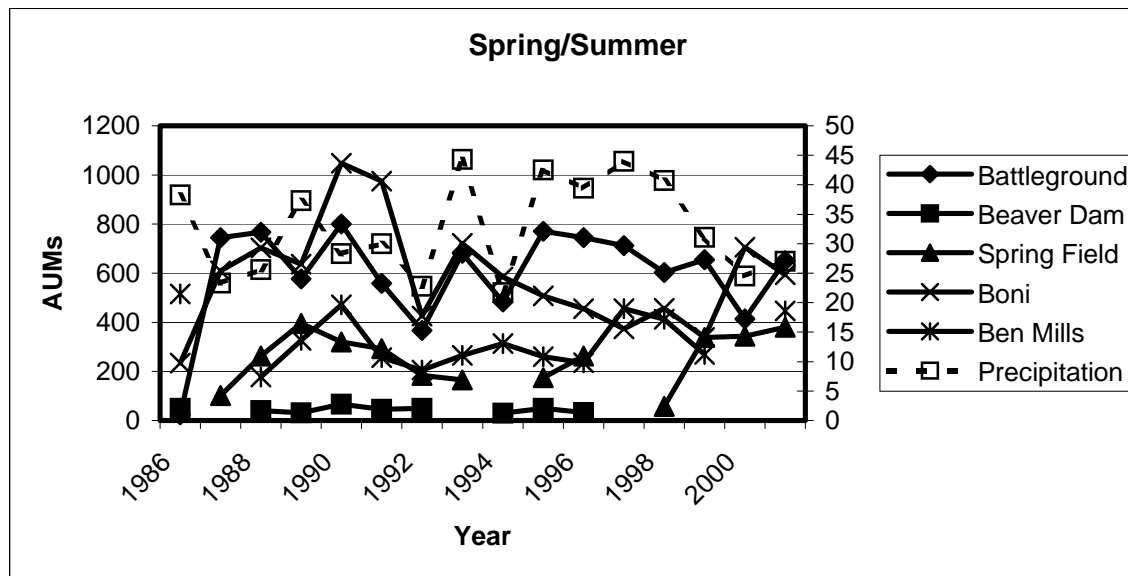
Appendix B. Actual Livestock Use and Use Periods, Early Spring Pastures, Nickel Creek Allotment, 1986-2001.

Spring Rest Rotation										
Pasture	Sheep Hills A			Sheep Hills B			Brace Flat			
	26A			26B			27			
Year	AUMs	# LVST	Use Period	AUMs	# LVST	Use Period	AUMs	# LVST	Use Period	Total AUMs
1986	834	826	5/1-5/31	0		REST	807	826	6/1-6/30	1641
1987	406	304	5/5-6/15	287	304	4/6-5/4	0		REST(F)	693
1988	893	480	4/16-6/14	441	257	4/26-6/25	0		REST(F)	1334
1989	0		REST	498	300	4/24-6/14	859	400	4/18-6/22	1357
1990	450	290	4/16-6/4	0		REST	771	416	4/15-6/11	1221
1991	662	333	4/14-6/14	600	335	4/15-6/8	0		REST	1262
1992	0		REST	344	225	4/15-5/31	947	606	4/21-6/7	1291
1993	485	240	4/19-6/19	0		REST	920	425	4/19-6/25	1405
1994	167	160	5/25-6/25	321	210	4/15-5/31	0		REST	488
1995	0		REST	434	360	4/17-5/23	804	358	5/25-8/1	1238
1996	421	359	4/26-5/31	0		REST	721	357	6/1-8/4	1142
1997	0		REST	455	425	4/16-5/22	480	425	5/23-6/30	935
1998	268	250	4/20-5/26	0		REST	64	130	6/2-6/18	332
1999	0		REST	398	550	4/16-5/10	819	555	5/11-6/30	1217
2000	615	425	4/18-5/31	0		REST	769	425	6/1-7/25	1384
2001	0		REST	610	350	4/1-5/23	622	350	5/23-7/15	1232



Appendix C. Actual Livestock Use and Use Periods, Spring Rest Rotation Use Pastures, Nickel Creek Allotment, 1986-2001.

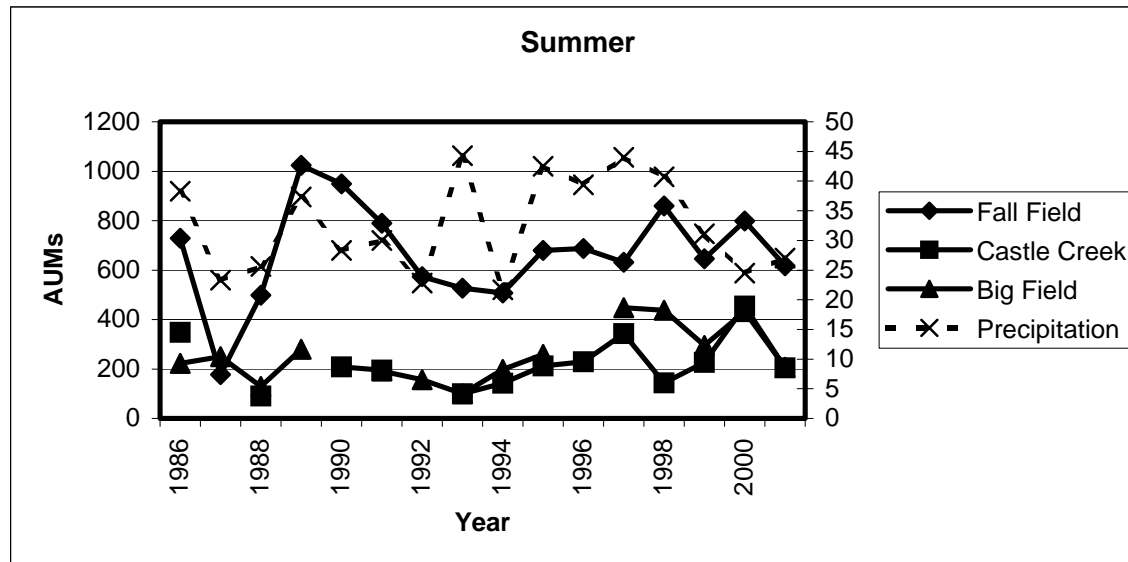
Spring/Summer															
Pasture	Battleground			Beaver Dam			Spring Field			Boni			Ben Mills		
	1			3			5			8			18		
Year	AUMs	#LVST	Use Period	AUMs	#LVST	Use Period	AUMs	#LVST	Use Period	AUMs	#LVST	Use Period	AUMs	#LVST	Use Period
1986	24	40	10/16-11/5	49	55	10/16-11/15			REST	234	174	9/20-11/5	515	826	7/12-8/4
1987	745	338	7/29-10/15			REST	101	147	8/9-9/1	609	343	5/28-7/28			REST
1988	766	140-605	8/7-10/10	40	465	9/1-9/3	263	224	6/12-7/22	703	465	7/8-8/30	177	83	4/28-7/18
1989	577	270	7/10-9/30	31	260&310	7&9	396	520Y	6/16-7/14	637	333	7/7-9/15	327	522	5/26-7/6
1990	800	150-288	6/15-10/17	67	150-250	6/13-15&9/28	320	110-200	6/15-9/30	1048	313	6/6-10/2	471	309	4/15-6/15
1991	589	180	6/15-10/2	45	17	6/15-9/15	293	110	6/15-9/15	975	300	6/20-10/12	257	300	4/28-5/30
1992	367	200	6/15-8/18	50	150&30	6&8&8-9/15	183	110	6/10-8/6	426	200	6/10-8/23	205	175	5/9-6/22
1993	681	200	6/29-10/25				165	75	7/8-9/22	721	200	6/22-10/28	265	200	6/12-8/1
1994	483	160	6/26-10/13	30	15	8/1-10/8			REST	584	210	4/15-7/31	314	295	4/15-5/25
1995	771	350	5/17-8/1	50	102	10/11-10/27	174	79	4/15-6/30	507	150	5/17-9/13	260	200	7/1-8/19
1996	744	273	5/26-8/27	32	102&243	8/27-30&10/30-31	263	100	5/15-7/15	456	149	6/11-9/25	236	175	4/15-6/10
1997	712	337	7/28-10/8					UNK	7/27-9/15	373	143	6/18-9/15	455	425	7/1-8/6
1998	602	330	5/30-7/31				57	60	8/10-9/11	457	149	6/1-9/14	412	395	6/10-7/15
1999	655	247	7/1-10/1				339	249	5/15-6/30	339	150	6/1-9/22	269	300	7/3-8/2
2000	414	200	5/21-7/23				343	145	6/21-8/31	706	150	5/29-9/17			REST
2001	651	50-294	7/16-10/31				380	150	7/16-9/30	594	49-150	5/15-9/15	446	348	7/24-8/31



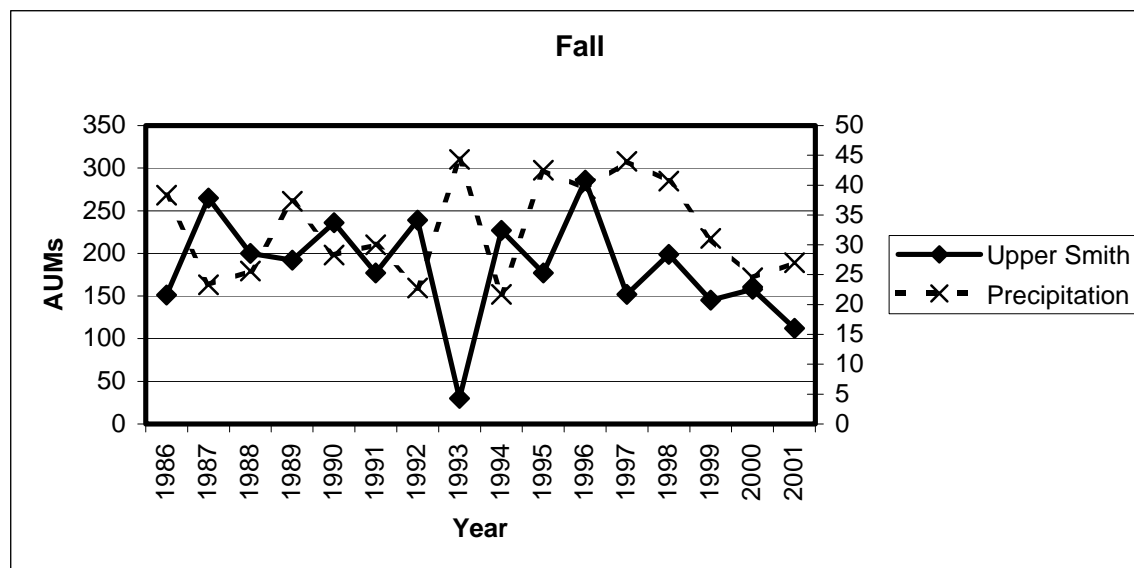
Appendix D. Actual Livestock Use and Use Periods, Spring/Summer Use Pastures, Nickel Creek Allotment, 1986-2001.

Appendix E. Actual Livestock Use and Use Periods, Summer Use Pastures, Nickel Creek Allotment, 1986-2001.

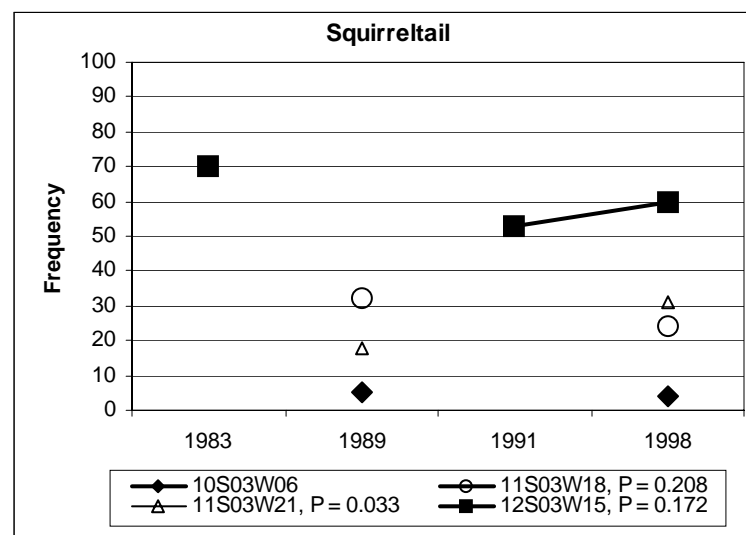
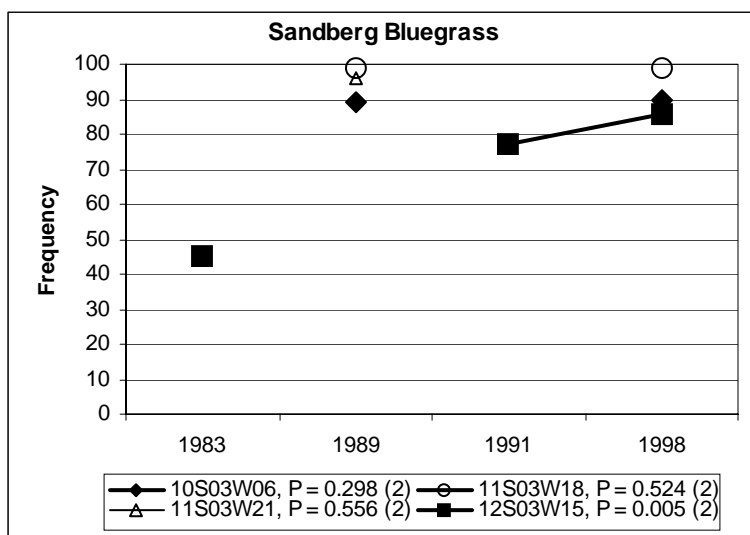
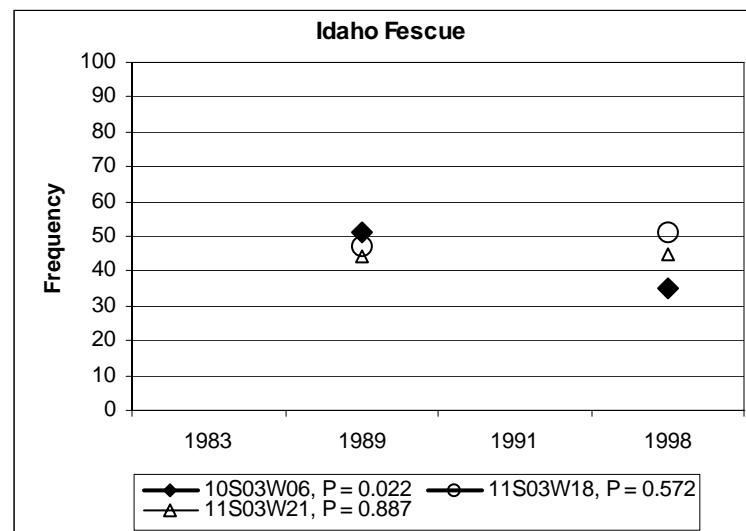
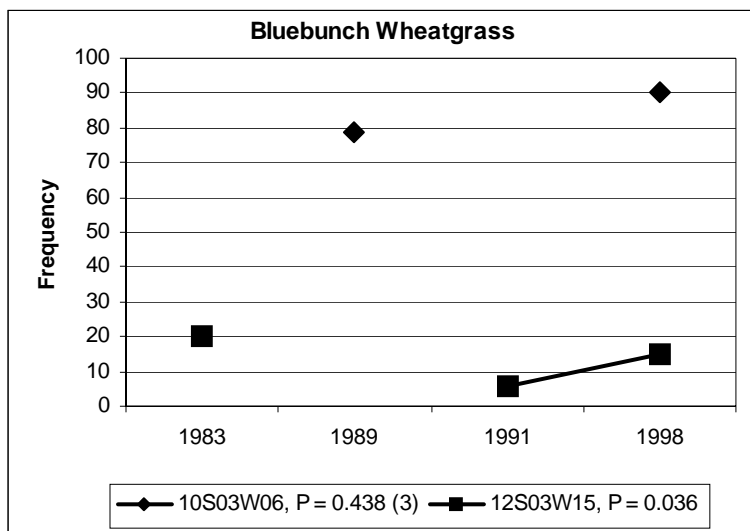
Summer										
Pasture	Fall Field			Castle Creek			Big Field			
	7			13			17			
Year	AUMs	# LVST	Use Period	AUMs	# LVST	Use Period	AUMs	# LVST	Use Period	Total AUMs
1986	729	460	8/12-10/15	348	177	8/5-10/15	223	174	8/5-9/20	1300
1987	177	200	10/1-11/1			REST	250	150	6/1-8/1	427
1988	499	425	10/1-11/10	91	209	8/2-8/17	130	198	7/9-8/1	720
1989	1024	520	7/10-9/22&10/13-11/1			REST	280	232	6/27-8/10	1304
1990	949	350	6/16-9/19	209	196	6/13-7/21			REST	1158
1991	789	226	6/16-10/15	196	126	8/5-9/30	191	200	6/12-7/16	1176
1992	573	100-300	6/6-9/25			REST	156	108	8/1-9/22	729
1993	527	200	6/24-9/23	100	174	8/4-8/24	100	174	8/25-9/14	727
1994	507	300-137	8/15-10/28	143	210	7/15-8/8	198	210	6/6-30&11/1-15	848
1995	679	350	8/5-10/11	212	250	9/12-10/12	259	250	8/5-9/11	1150
1996	688	400	9/1-10/31	229	200	8/5-9/15			REST	917
1997	632	341	5/25-7/27	343	395	9/15-10/14	448	397	8/7-9/14	1423
1998	859	345	8/1-10/25	144	79	7/16-9/16	438	315	7/30-9/15	1441
1999	646	475	9/6-10/22	226	100	4/15-7/1	295	300	8/3-9/5	1167
2000	799	200-300	8/1-10/31	454	300	9/1-10/16	432	375	7/29-9/1	1685
2001	618	200	4/15-7/17	204	100	4/15-6/15	207	100	8/30-10/31	1029



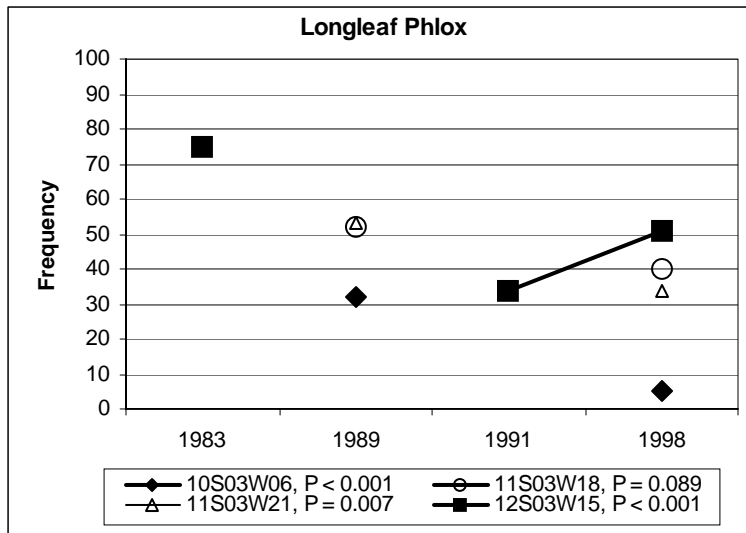
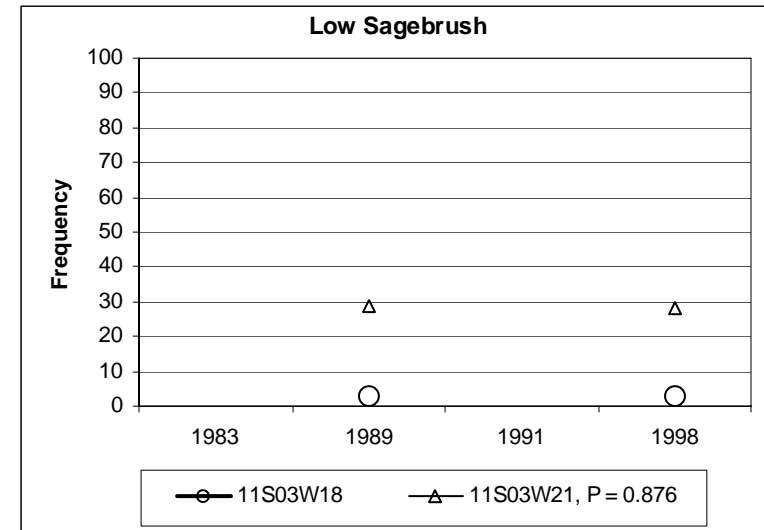
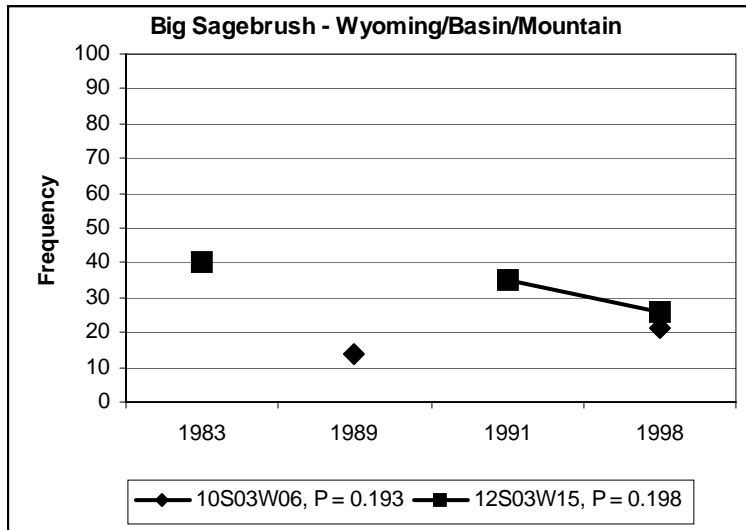
Fall			
Pasture	Upper Smith		
	10		
Year	AUMs	# LVST	Use Period
1986	151	56	7/14-10/15
1987	265	61	5/20-11/1
1988	200	200	10/1-11/4
1989	192	224	9/18-10/17
1990	236	196	8/21-10/1
1991	177	200	10/1-10/31
1992	239	178	8/15-9/30
1993	30	174	9/15-9/20
1994	227	300	10/3-10/29
1995	177	200	10/1-10/31
1996	286	250	9/16-10/25
1997	152	375	10/17-10/30
1998	199	275	10/1-10/25
1999	145	100	9/6-10/25
2000	158	300	10/15-10/30
2001	112	200	9/15-10/1



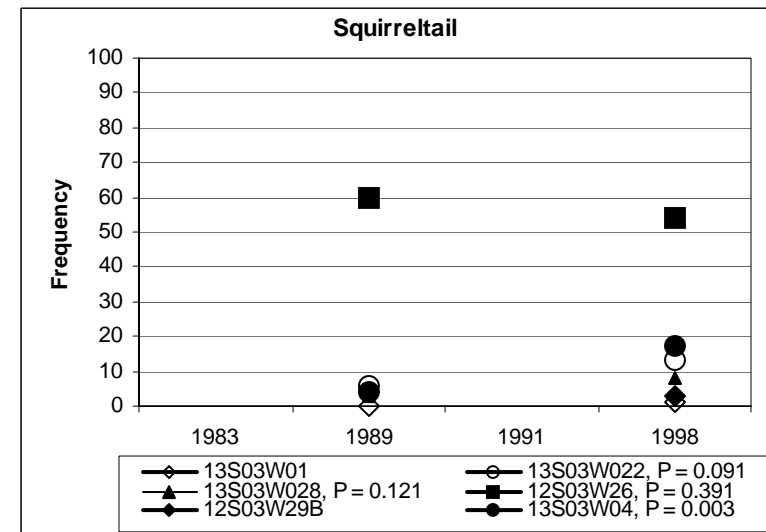
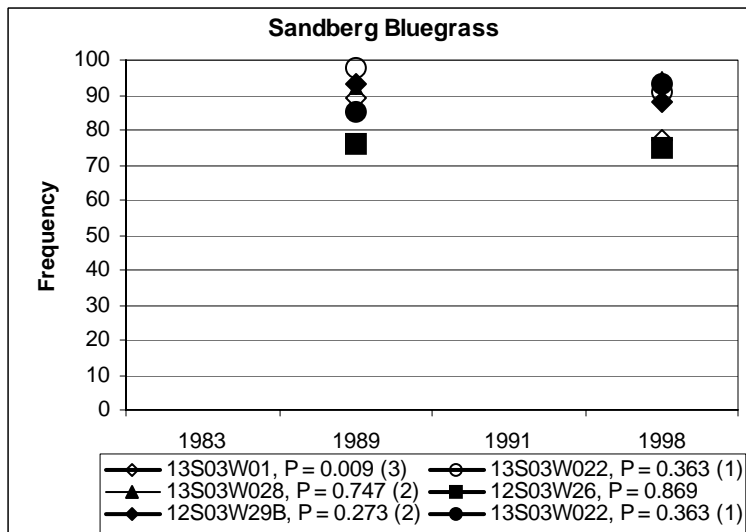
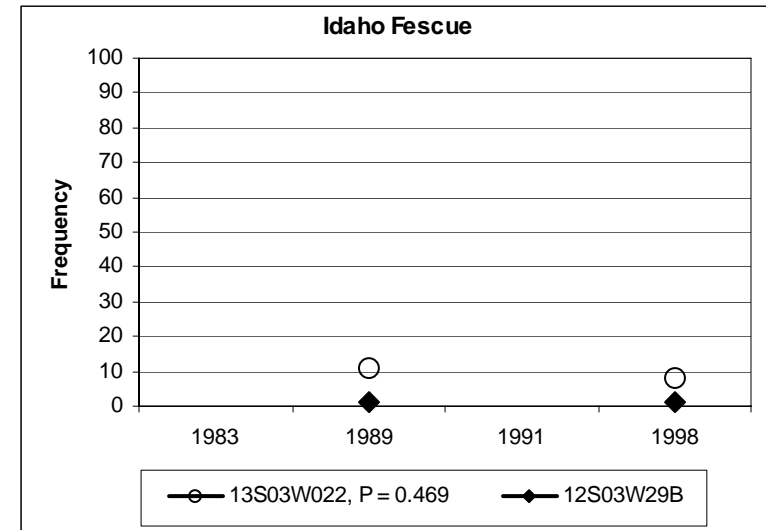
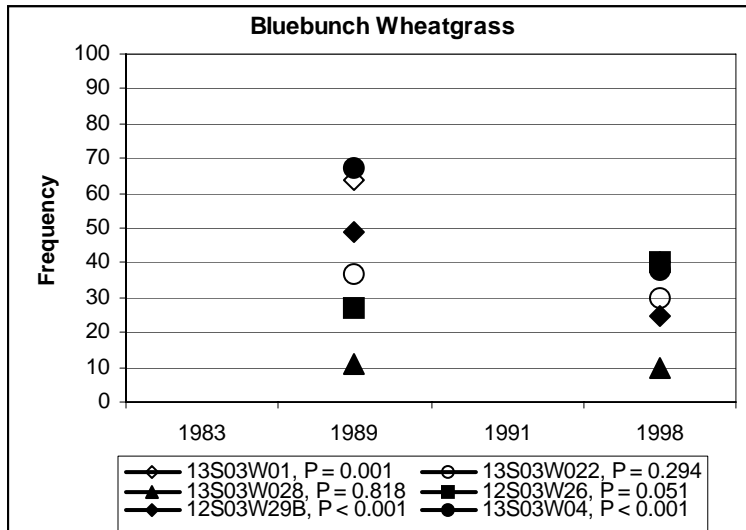
Appendix F. Actual Livestock Use and Use Periods, Fall Use Pasture, Nickel Creek Allotment, 1986-2001.



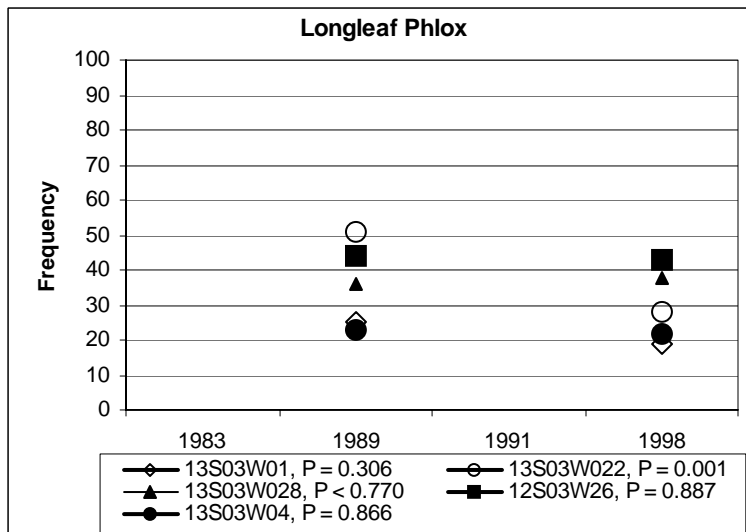
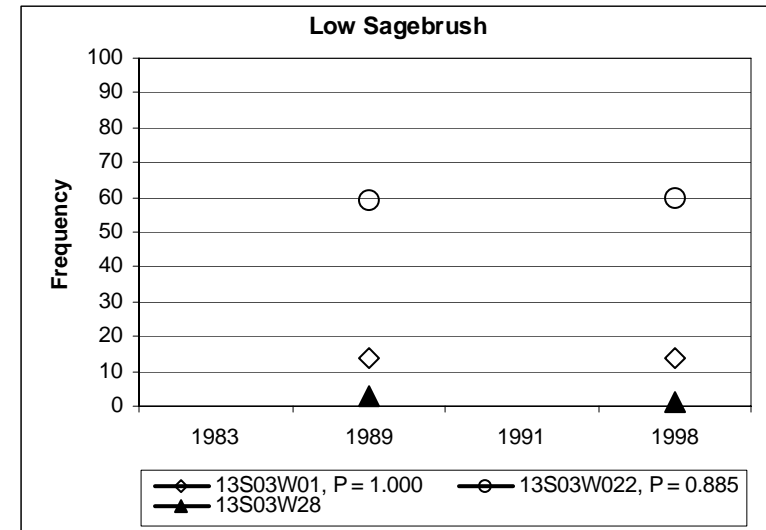
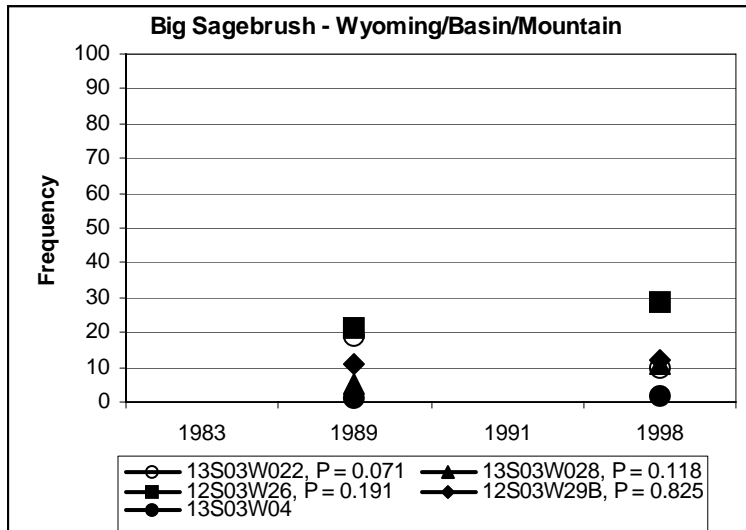
Appendix G. Frequencies of Perennial Bunchgrasses in Early Spring Use Pastures, Nickel Creek Allotment, 1983-1998.



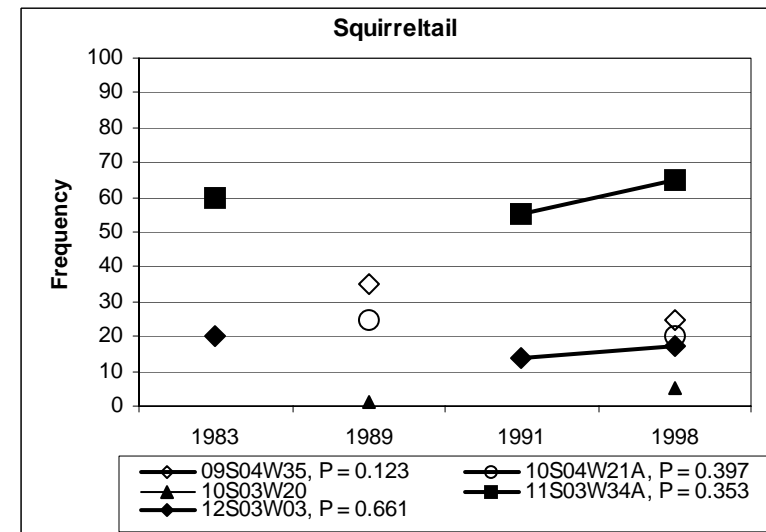
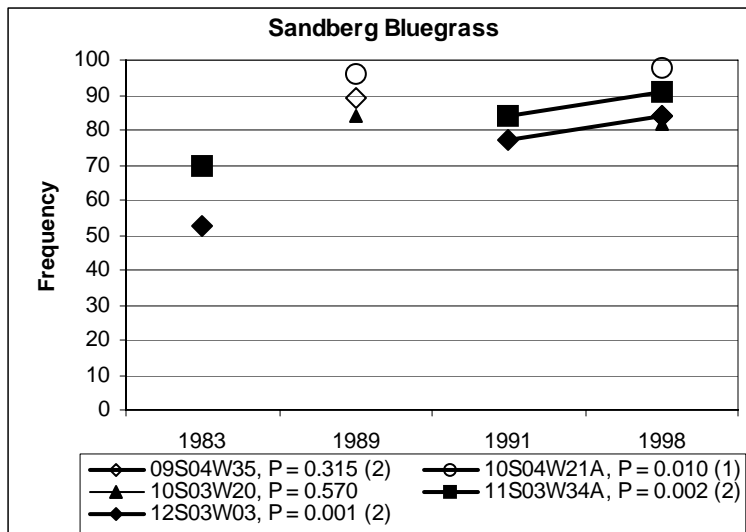
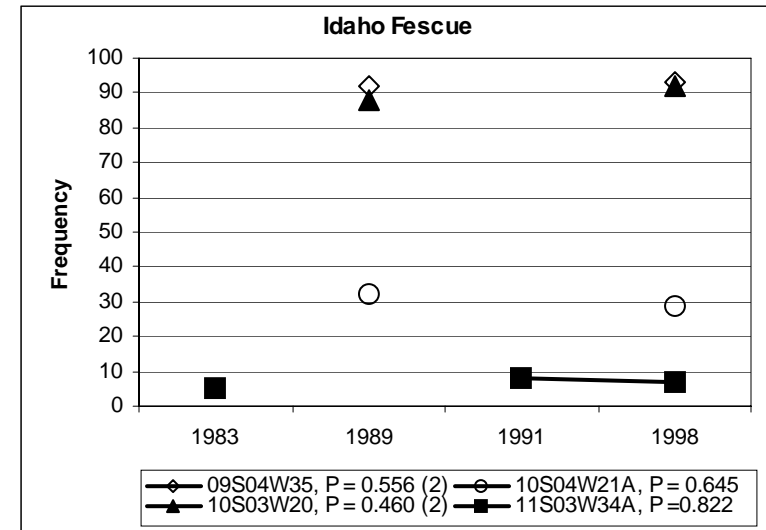
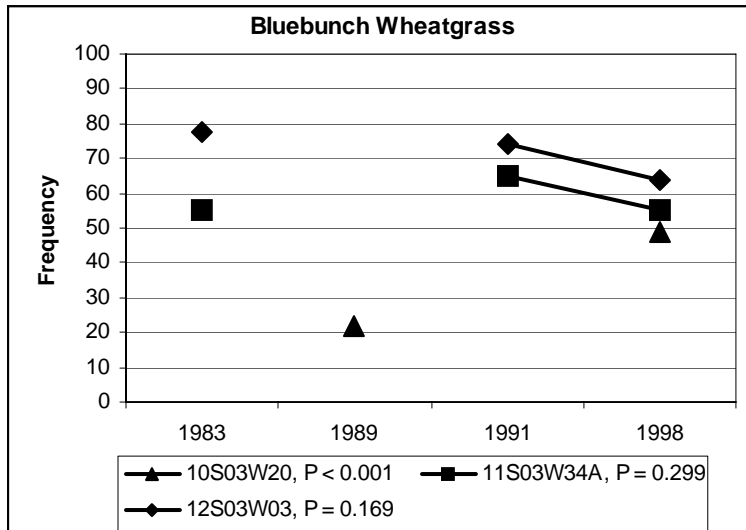
Appendix H. Frequencies of Shrubs and Forbs in Early Spring Use Pastures, Nickel Creek Allotment, 1983-1998.



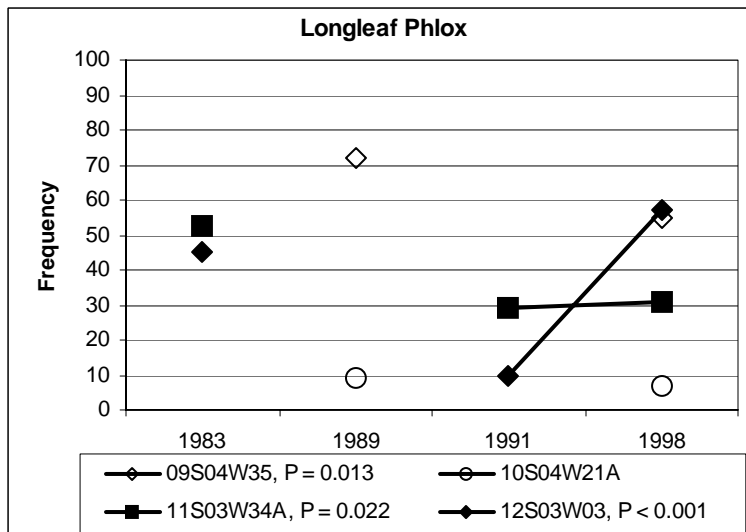
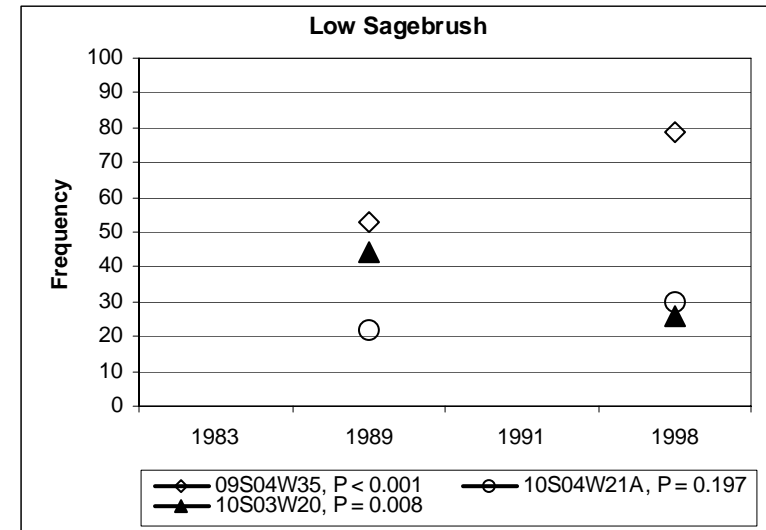
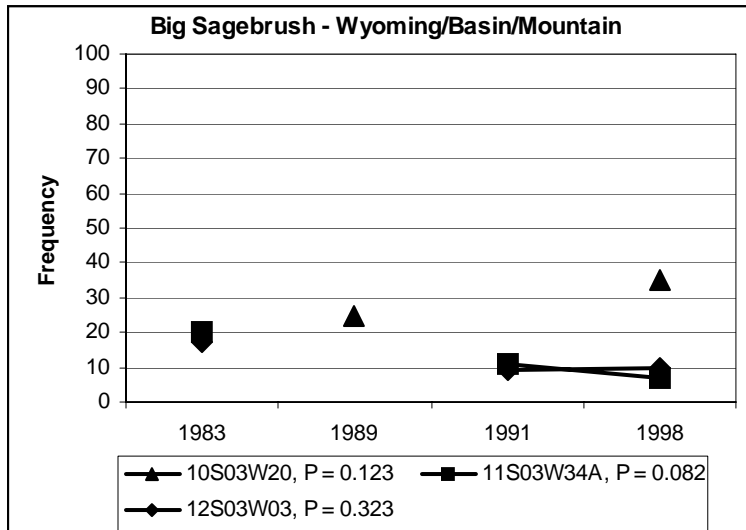
Appendix I. Frequencies of Perennial Bunchgrasses in Spring Rest/Rotation Use Pastures, Nickel Creek Allotment, 1983-1998.



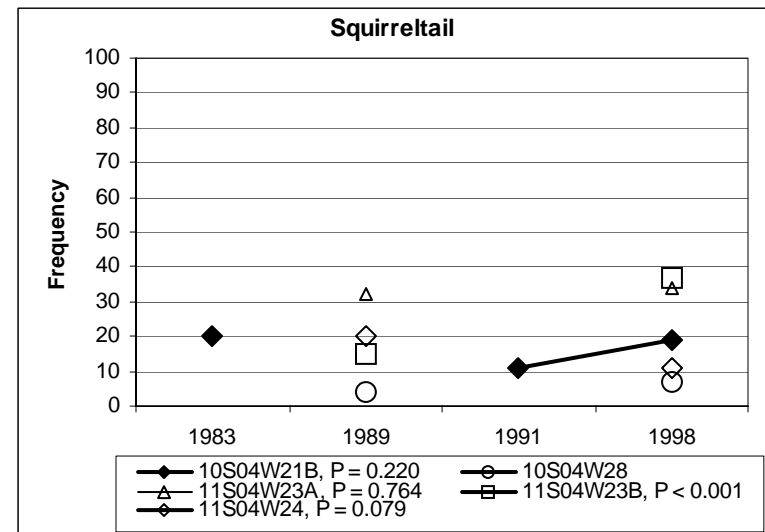
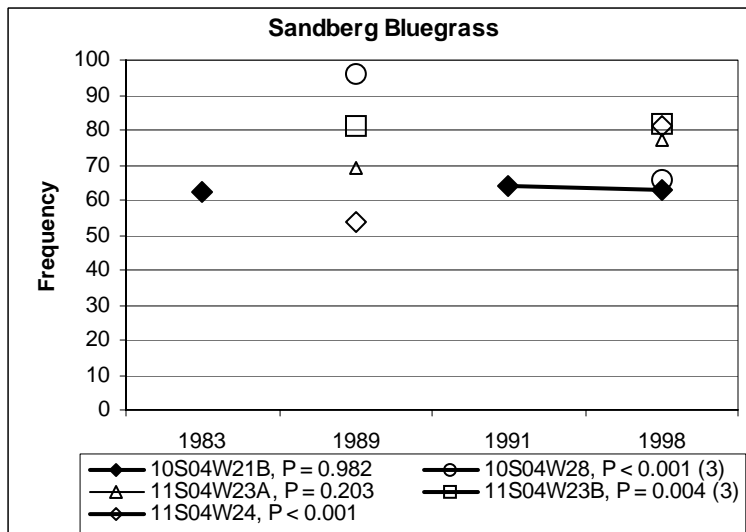
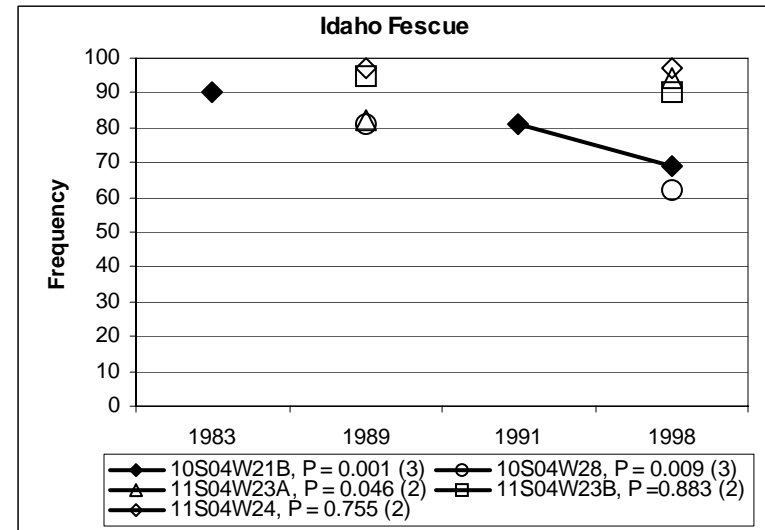
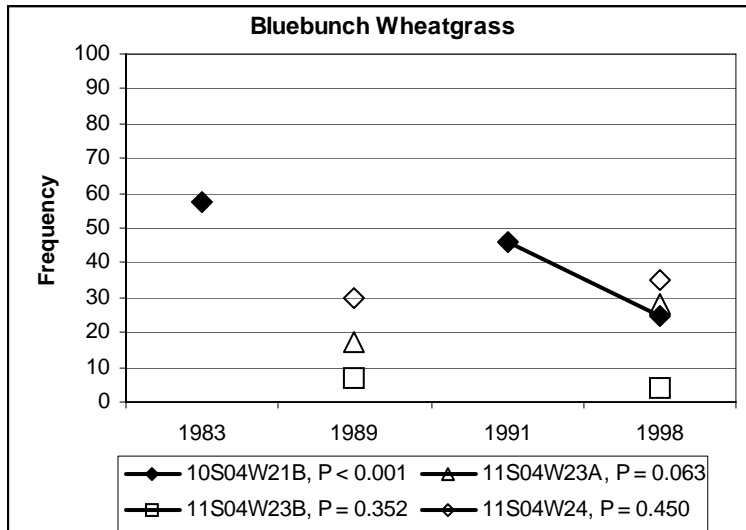
Appendix J. Frequencies of Shrubs and Forbs in Spring Rest/Rotation Use Pastures, Nickel Creek Allotment, 1983-1998.



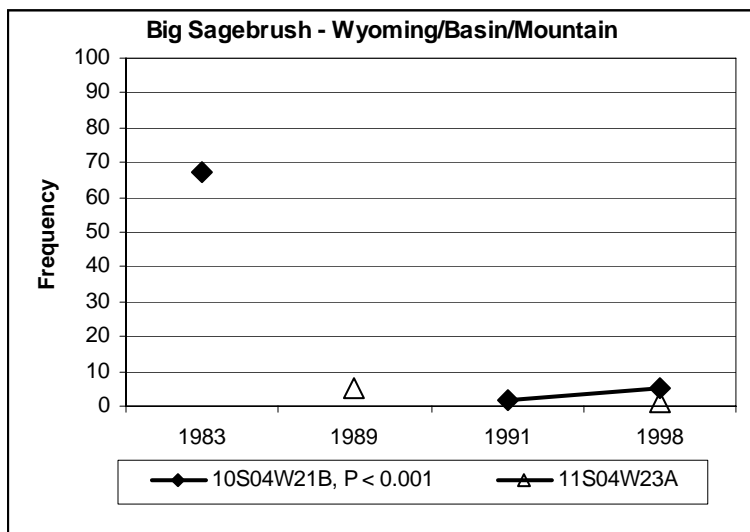
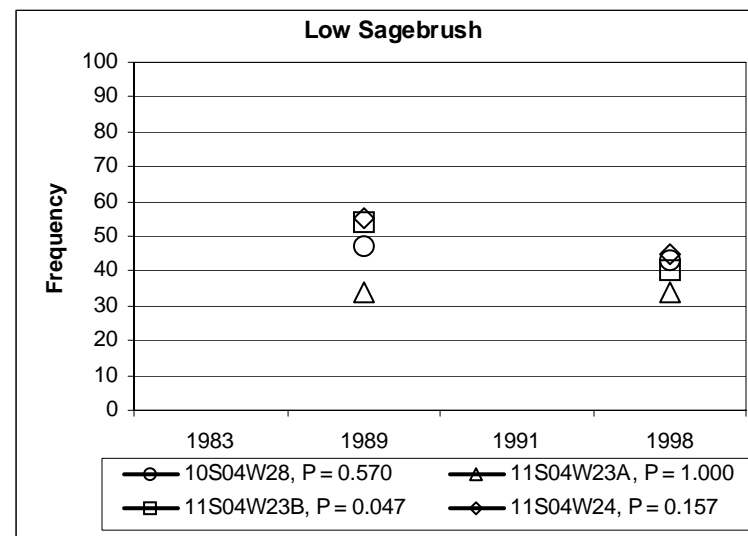
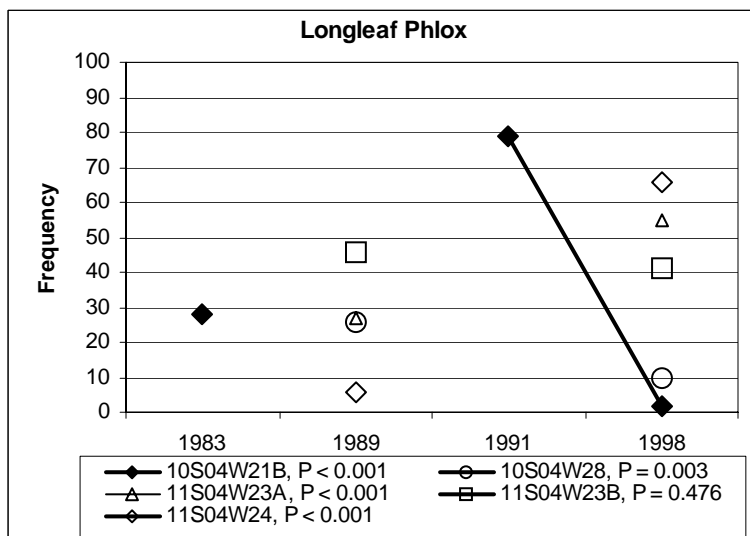
Appendix K. Frequencies of Perennial Bunchgrasses in Spring/Summer Use Pastures, Nickel Creek Allotment, 1983-1998.



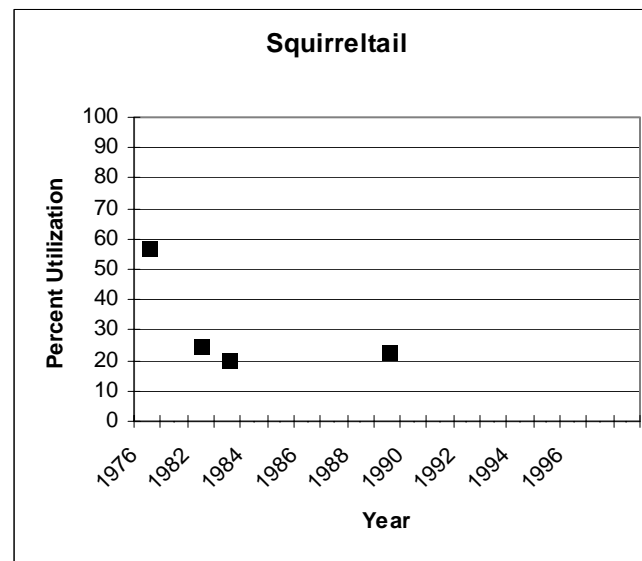
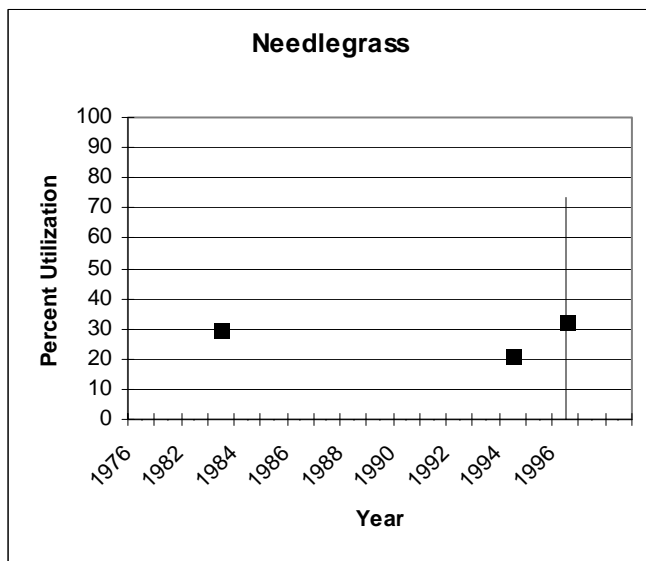
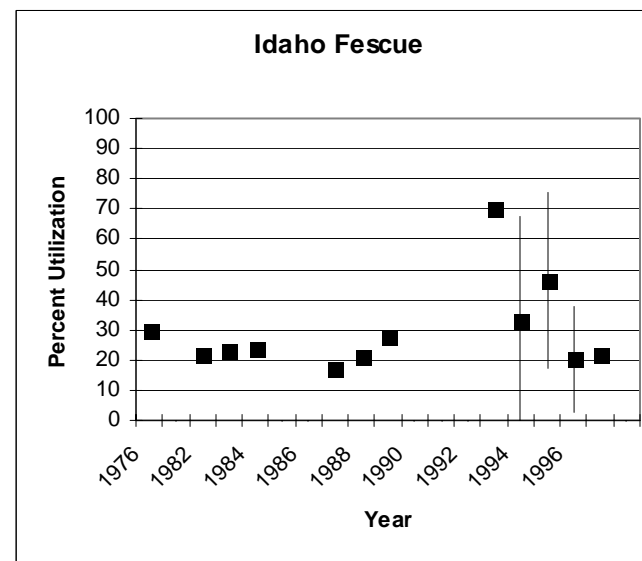
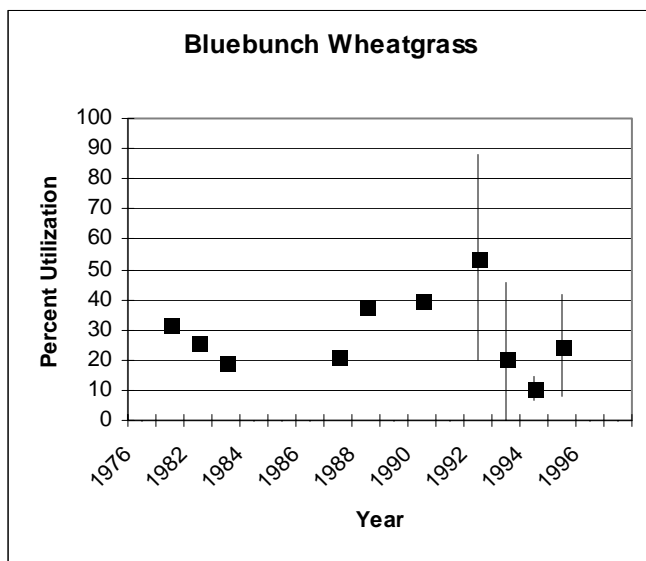
Appendix L. Frequencies of Shrubs and Forbs in Spring/Summer Use Pastures, Nickel Creek Allotment, 1983-1998.



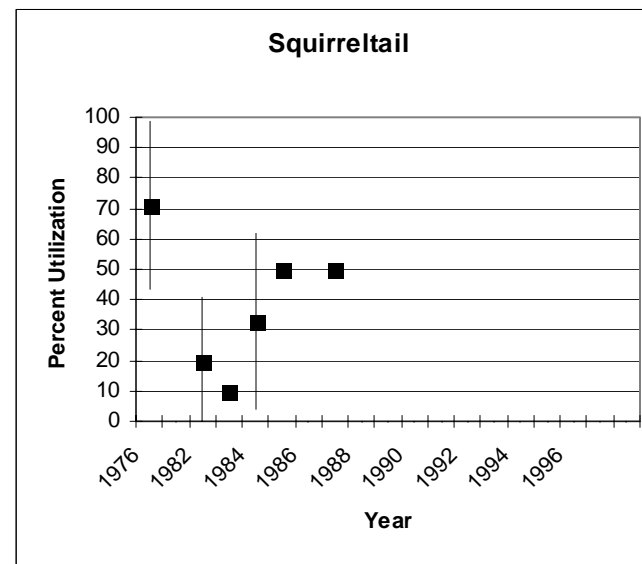
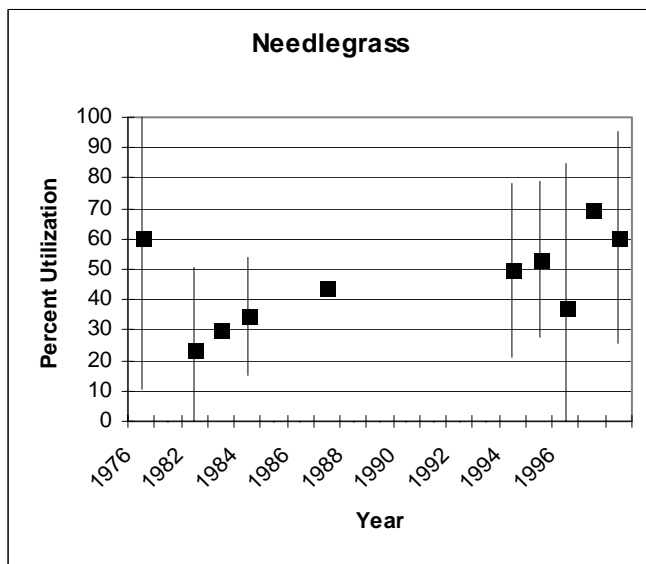
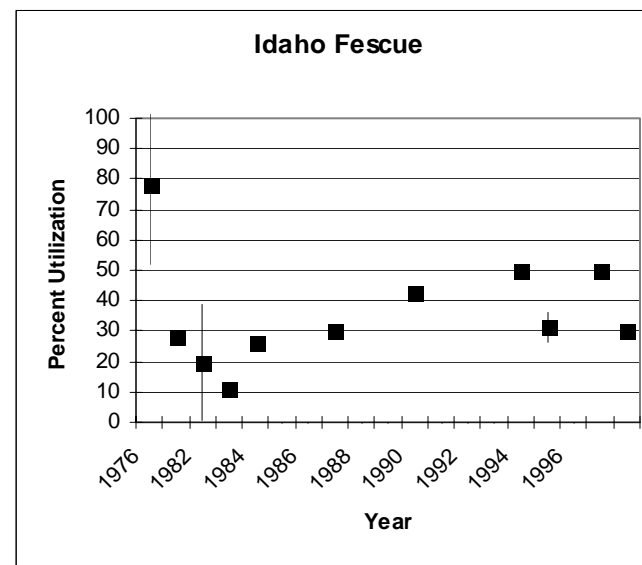
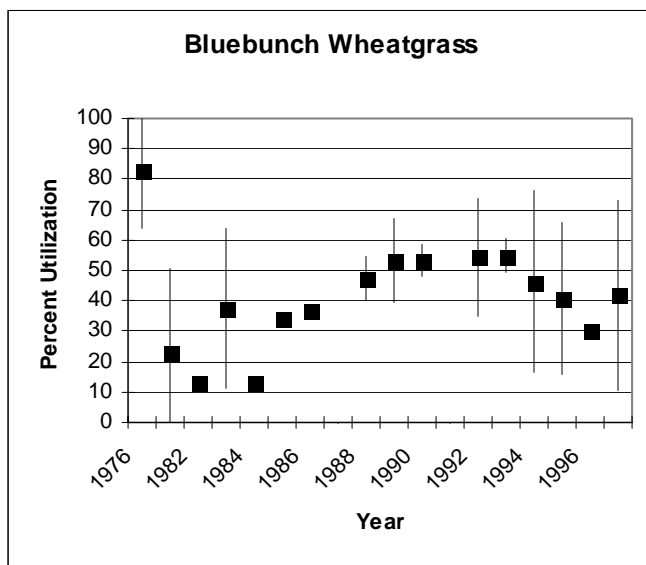
Appendix M. Frequencies of Perennial Bunchgrasses in Summer Use Pastures, Nickel Creek Allotment, 1983-1998.



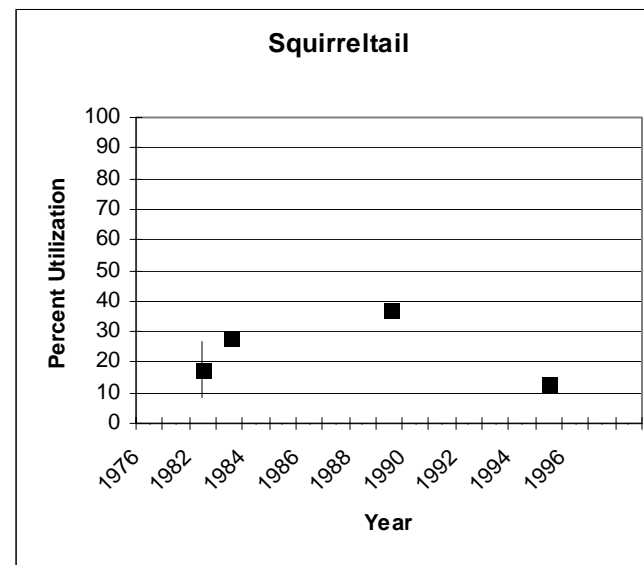
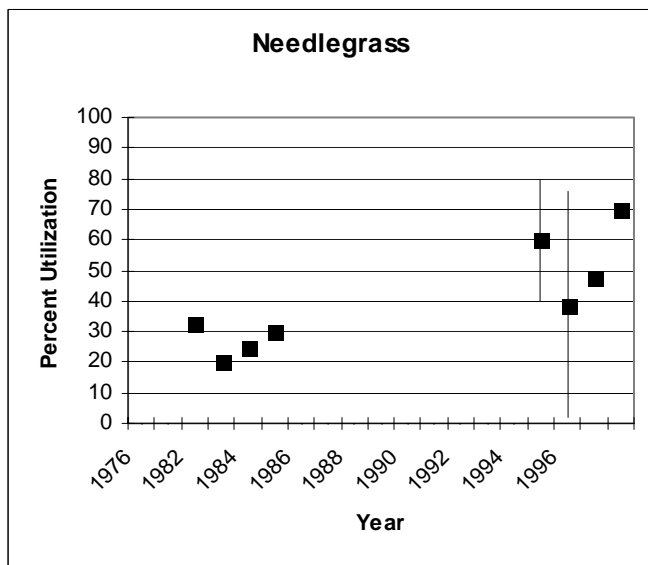
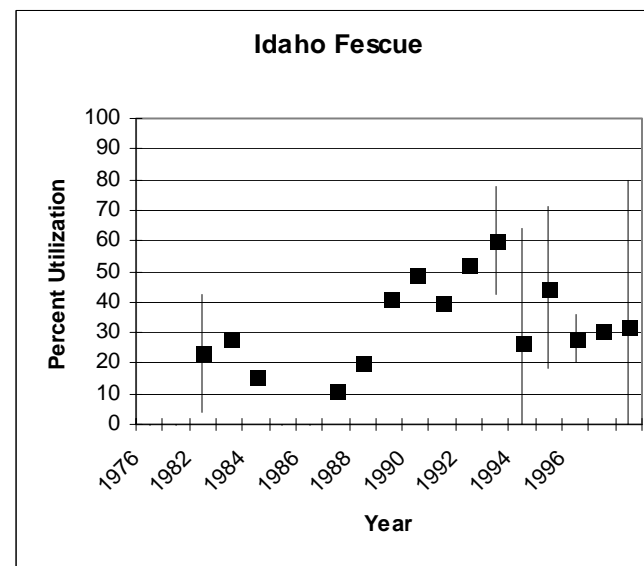
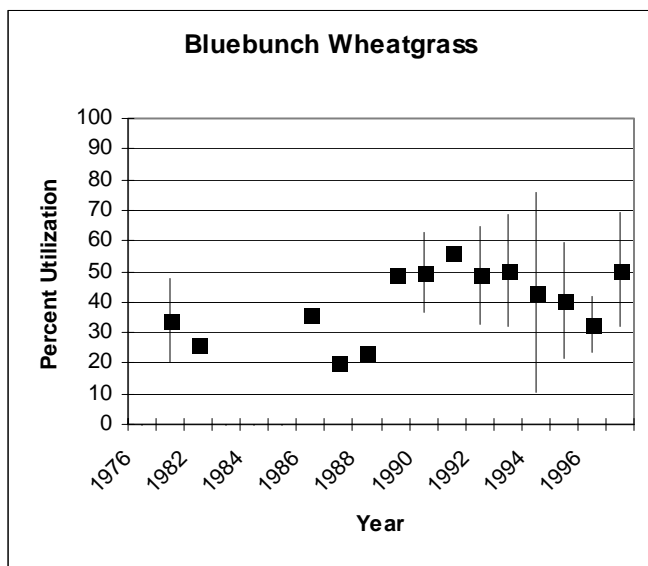
Appendix N. Frequencies of Shrubs and Forbs in Summer Use Pastures, Nickel Creek Allotment, 1983-1998.



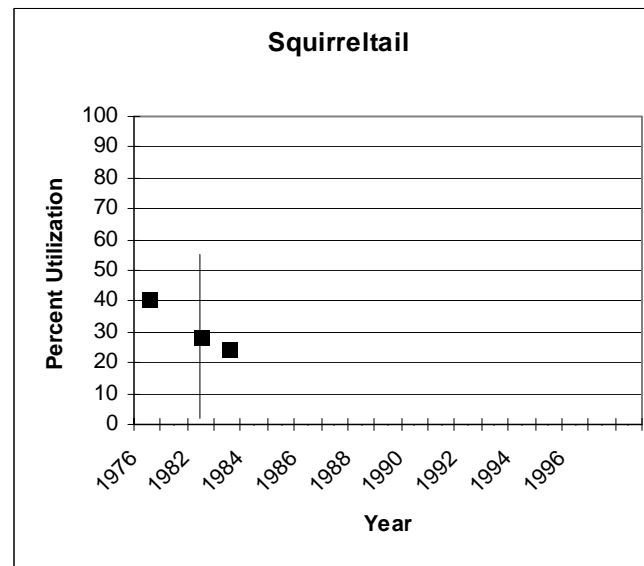
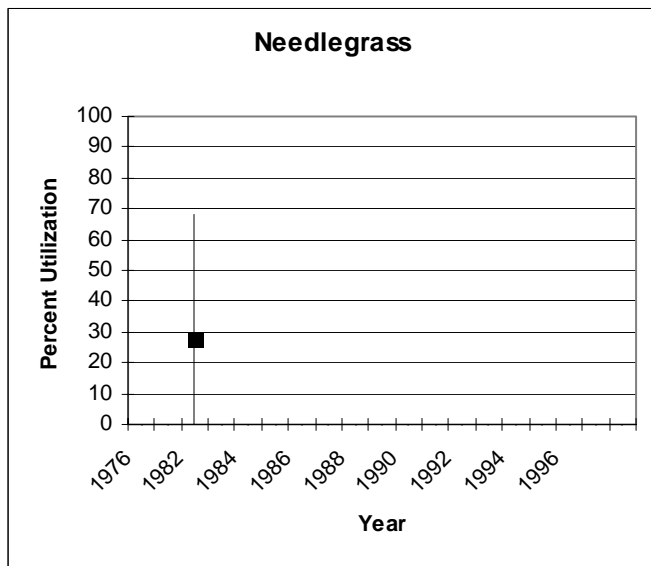
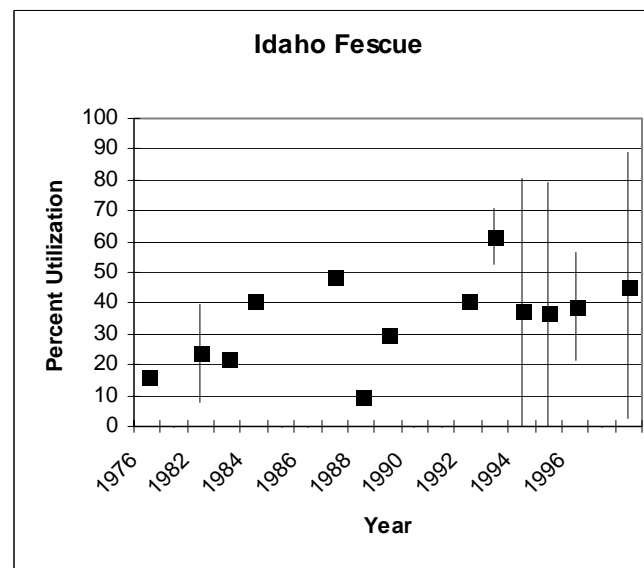
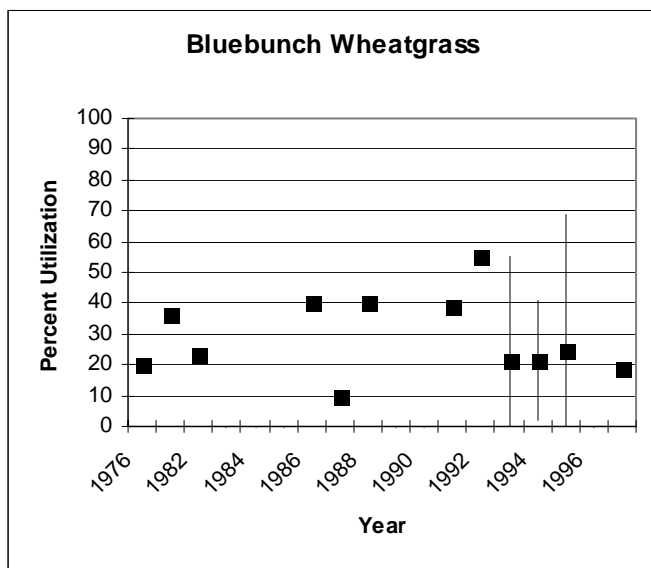
Appendix O. Average Utilization of Perennial Grasses \pm 2 Standard Deviations (vertical bar), Early Spring Use Pastures, Nickel Creek Allotment, 1976-97.



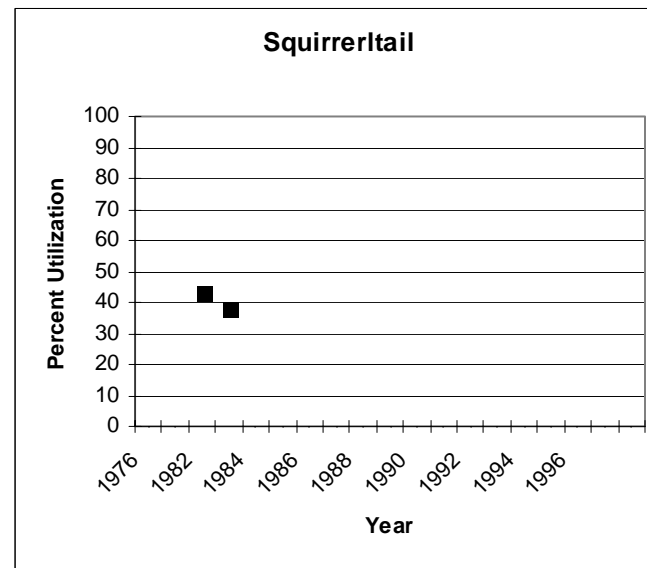
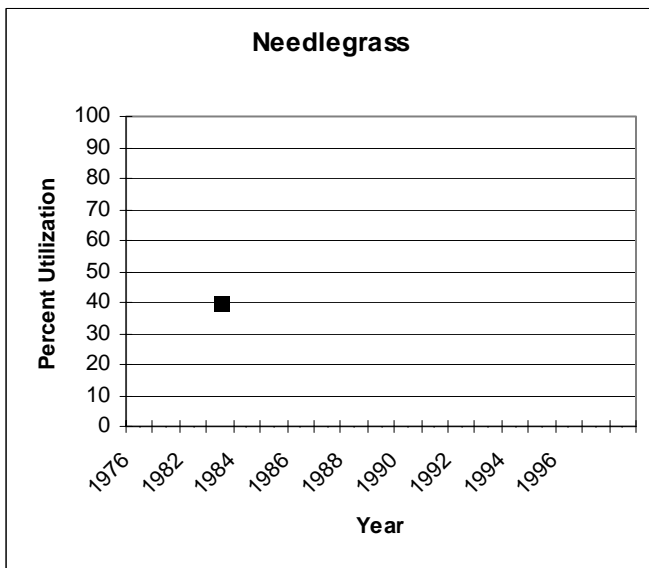
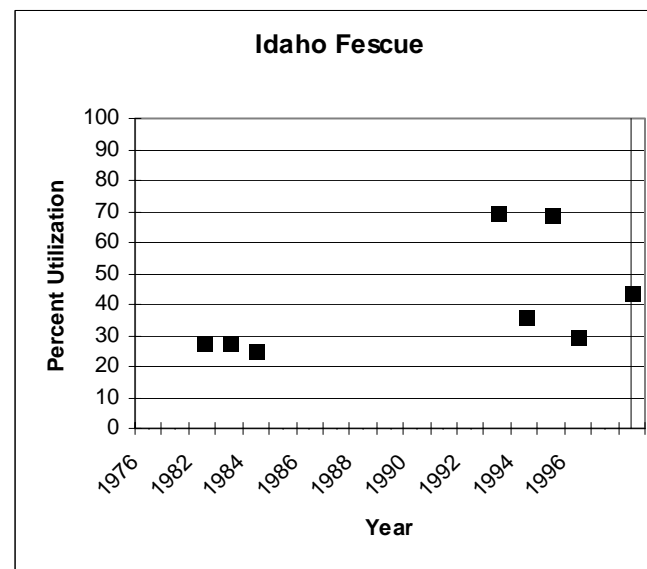
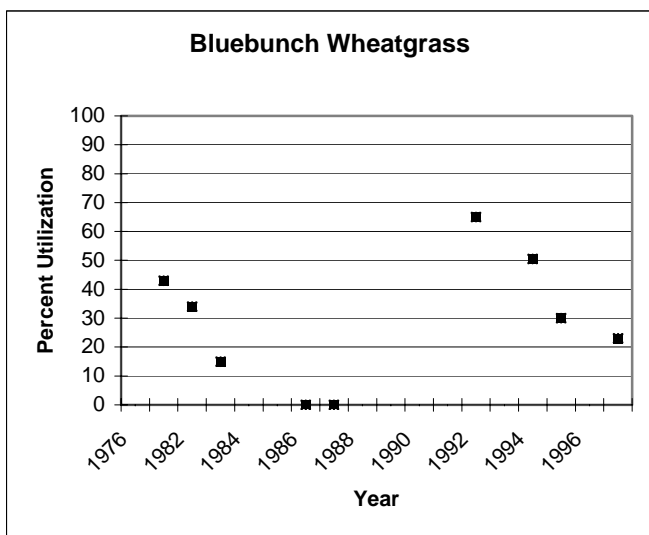
Appendix P. Average Utilization of Perennial Grasses \pm 2 Standard Deviations (vertical bar), Spring Rest/Rotation Use Pastures, Nickel Creek Allotment, 1976-97.



Appendix Q. Average Utilization of Perennial Grasses \pm 2 Standard Deviations (vertical bar), Spring/Summer Use Pastures, Nickel Creek Allotment, 1976-97.



Appendix R. Average Utilization of Perennial Grasses \pm 2 Standard Deviations (vertical bar), Summer Use Pastures, Nickel Creek Allotment, 1976-97.



Appendix S. Average Utilization of Perennial Grasses \pm 2 Standard Deviations (vertical bar), Summer Use Pastures, Nickel Creek Allotment, 1976-97.

Pasture		2				16A	16B		20	22	23	
Location		09S04W36	10S03W05	10S03W06	10S03W08	11S03W18A	11S03W21	11S03W27	12S03W17	12S03W14	12S03W15	12S03W23
Ecological Site		Loamy 13-16	Loamy 13-16	Loamy 13-16	Loamy 12-16	Shallow Claypan 12-16	Shallow Claypan 12-16	Shallow Claypan 12-16	Shallow Claypan 12-16	Loamy 11-13	Loamy 11-13	Loamy 11-13
Indicator												
1. Rills	S,H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
2. Water Flow Patterns	S,H	s-m	m	n-s	n-s	m-e	s-m	s-m	m	n-s	s-m	n-s
3. Pedestals/Terracettes	S,H	n-s	m	M	s-m	m-e	s-m		m	m	n-s	s-m
4. Bare Ground	S,H	s-m	s-m	M	n-s	m-e	m	n-s	s-m	m	m	m
5. Gullies	S,H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
6. Wind Scoured, Blowouts and/or Depositions	S	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
7. Litter Movement	H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
8. Soil Surface to Erosion	S,H,B	n-s	s-m	s-m	n-s	m	s-m	n-s	s-m	m	m	s-m
9. Soil Surface Loss or Degradation	S,H,B	n-s	m	s-m	s-m	s-m	s-m	n-s	s-m	m	n-s	s-m
10. Plant Community Comp. & Distribution Relative to Infiltration & Runoff	H	s-m	s-m	n-s	n-s	s-m	n-s	n-s	s-m	m	m	s-m
11. Compaction Layer	S,H,B	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
12. unctional/Structural Groups	B	n-s	s-m	n-s	s-m	m	S-m	n-s	s-m	s-m	s-m	m
13. Plant Mortality/Decadence	B	n-s	m	n-s	n-s	s-m	s-m	n-s	n-s	n-s	n-s	n-s
14. Litter Amount	H,B	n-s	s-m	n-s	n-s	m	n-s	n-s	n-s	n-s	s-m	n-s
15. Annual Production	B	n-s	n-s	n-s	n-s	s-m	n-s	n-s	n-s	n-s	s-m	n-s
16. Invasive Plants	B	s-m	m-e	s-m	m	s-m	s-m	s-m	s-m	m-e	m-e	e
17. Reproductive Capability of Perennial Plants	B	n-s	n-s	n-s	n-s	m	n-s	n-s	n-s	n-s	n-s	n-s

Appendix T. Rangeland Health Evaluation Ratings, Early Spring Use Pastures, Nickel Creek Allotment, 2001. (S = Soil/Site Stability Indicator, H = Hydrologic Function Indicator, B = Biotic Integrity Indicator)

Pasture		26A				26B				27				
Location		12S03W24	12S03W35 A	13S03W01A	13S03W01B	13S02W07	13S03W22A	13S03W22B	13S03W23	12S03W26	12S03W28	12S03W29	12S03W35B	13S03W04
Ecological Site		Shallow Claypan 1-13	Loamy 11-13	Shallow Claypan 11-13	Shallow Claypan 11-13	Shallow Claypan 12-16	Loamy 11-13	Shallow Claypan 11-13	Shallow Claypan 11-13	Loamy 7-10	Loamy 11-13	Loamy 11-13	Loamy 11-13	Loamy 11-13
Indicator														
1. Rills	S,H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
2. Water Flow Patterns	S,H	s-m	s-m	s-m	s-m	m-e	m	m	s-m	n-s	n-s	n-s	s-m	n-s
3. Pedestals/Terracettes	S,H	s-m	S-m	S-m	s-m	m-e	m	m-e	m	S-m	s-m	s-m	s-m	s-m
4. Bare Ground	S,H	n-s	n-s	n-s	n-s	n-s	m	n-s	s-m	m	n-s	n-s	m	m
5. Gullies	S,H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
6. Wind Scoured, Blowouts and/or Depositions	S	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
7. Litter Movement	H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
8. Soil Surface Resistance to Erosion	S,H ,B	s-m	s-m	n-s	n-s	n-s	s-m	s-m	s-m	m	s-m	s-m	m	m
9. Soil Surface Loss or Degradation	S,H ,B	s-m	s-m	s-m	s-m	m	m	m	m	s-m	s-m	s-m	s-m	m
10. Plant Community Composition & Distribution Relative to Infiltration & Runoff	H	n-s	s-m	n-s	n-s	n-s	s-m	s-m	n-s	s-m	s-m	m	s-m	m-e
11. Compaction Layer	S,H ,B	n-s	s-m	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
12. Functional/Structural Groups	B	s-m	m	s-m	n-s	n-s	m	s-m	n-s	s-m	m	m	m	m-e
13. Plant Mortality/Decadence	B	n-s	n-s	n-s	n-s	s-m	s-m	s-m	n-s	n-s	n-s	n-s	n-s	n-s
14. Litter Amount	H,B	n-s	n-s	n-s	n-s	n-s	s-m	n-s	n-s	n-s	n-s	n-s	n-s	n-s
15. Annual Production	B	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
16. Invasive Plants	B	s-m	m-e	m-e	m-e	m	e	n-s	s-m	m-e	e	e	m-e	e
17. Reproductive Capability of Perennial Plants	B	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s

Appendix U. Rangeland Health Evaluation Ratings, Spring Rest Rotation Use Pastures, Nickel Creek Allotment, 2001. (S = Soil/Site Stability Indicator, H = Hydrologic Function Indicator, B = Biotic Integrity Indicator)

Pasture		1				3		5			
Location		09S04W35	10S04W02	10S04W09A	10S04W09B	10S04W15	10S04W23A	10S04W09C	10S04W21A	10S04W21B	10S04W21C
Ecological site		Shallow stony loam 10-14	Very shallow stony loam 10-14	Churning clay 12-16	Shallow claypan 12-16	Loamy 13-16	Shallow Claypan 12-16	Loamy 13-16	Shallow Claypan 12-16	Mahogany savannah 16-22	Loamy 13-16
Indicator											
1. Rills	S-H	s-m	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
2. Water Flow Patterns	S-H	s-m	s-m	s-m	s-m	n-s	s-m	n-s	m	s-m	s-m
3. Pedestals / Terracettes	S-H	n-s	m	s-m	m	s-m	m	n-s	m-e	s-m	s-m
4. Bare Ground	S-H	n-s	m	s-m	s-m	n-s	s-m	n-s	s-m	n-s	s-m
5. Gullies	S-H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
6. Wind Scoured, Blowouts and/or Depositions	S	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
7. Litter Movement	H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
8. Soil Surface Resistance to Erosion	S-H-B	n-s	n-s	n-s	s-m	n-s	m	s-m	s-m	n-s	s-m
9. Soil Surface Loss or Degradation	S-H-B	s-m	s-m	n-s	s-m	s-m	m	n-s	s-m	s-m	s-m
10. Plants Community Comp. & Distrib. relative to infiltration & runoff	H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	s-m	s-m	s-m
11. Compaction Layer	S-H-B	n-s	n-s	n-s	n-s	n-s	n-s	n-s	s-m	n-s	n-s
12. Functional / Structural Groups	B	n-s	n-s	n-s	n-s	s-m	m	s-m	s-m	s-m	s-m
13. Plant Mortality / Decadence	B	n-s	n-s	s-m	n-s	n-s	n-s	n-s	s-m	s-m	s-m
14. Litter Amount	H-B	n-s	n-s	n-s	n-s	n-s	n-s	n-s	s-m	n-s	s-m
15. Annual Production	B	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
16. Invasive Plants	B	s-m	m	n-s	s-m	m	m	m	m	e	m-e
17. Reproductive Capability of Perennial Plants	B	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s

Appendix V. Rangeland Health Evaluation Ratings, Spring/Summer Use Pastures, Nickel Creek Allotment, 2001. (S = Soil/Site Stability Indicator, H = Hydrologic Function Indicator, B = Biotic Integrity Indicator)

Pasture		8						18			
Location		10S03W19	10S03W20	10S03W30	11S03W04	11S03W10	10S03W18	12S03W03A	12S03W09	12S03W10	11S03W34
Ecological site		Shallow claypan 12-16	Loamy 13-16	Shallow claypan 12-16	Shallow claypan 12-16	Shallow claypan	Loamy 13-16	Loamy 11-13	Shallow claypan 12-16	Loamy 7-10	Loamy 11-13
Indicator											
1. Rills	S-H	n-s	n-s	n-s	n-s	n-s	s-m	n-s	n-s	n-s	n-s
2. Water Flow Patterns	S-H	s-m	s-m	s-m	s-m	s-m	m	s-m	m	m	n-s
3. Pedestals / Terracettes	S-H	s-m	s-m	s-m	m	s-m	m	s-m	m	s-m	n-s
4. Bare Ground	S-H	s-m	n-s	s-m	m	n-s	m	s-m	s-m	s-m	n-s
5. Gullies	S-H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
6. Wind Scoured, Blowouts and/or Depositions	S	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
7. Litter Movement	H	n-s	n-s	n-s	n-s	n-s	s-m	n-s	n-s	n-s	s-m
8. Soil Surface Resistance to Erosion	S-H-B	s-m	n-s	s-m	m	n-s	n-s	s-m	s-m	s-m	s-m
9. Soil Surface Loss or Degradation	S-H-B	s-m	n-s	s-m	s-m	s-m	m	s-m	m	s-m	s-m
10. Plants Community Composition & Distribution relative to infiltration & runoff	H	n-s	n-s	n-s	n-s	n-s	s-m	n-s	n-s	n-s	s-m
11. Compaction Layer	S-H-B	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
12. Functional / Structural Groups	B	s-m	s-m	n-s	s-m	n-s	n-s	s-m	s-m	s-m	s-m
13. Plant Mortality / Decadence	B	n-s	n-s	n-s	m	n-s	n-s	n-s	n-s	n-s	n-s
14. Litter Amount	H-B	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
15. Annual Production	B	n-s	n-s	n-s	n-s	n-s	s-m	n-s	n-s	n-s	n-s
16. Invasive Plants	B	s-m	m-e	s-m	n-s	s-m	m	s-m	n-s	m	n-s
17. Reproductive Capability of Perennial Plants	B	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s

Appendix V (cont.). Rangeland Health Evaluation Ratings, Spring/Summer Use Pastures, Nickel Creek Allotment, 2001. (S = Soil/Site Stability Indicator, H = Hydrologic Function Indicator, B = Biotic Integrity Indicator)

Pasture		7				13					17		
Location		10S04W21 D	10S04W28 A	10S04W28 B	11S04W03	11S04W23 C	11S04W14 A	11S04W14 B	11S04W23 A	11S04W23 B	11S04W24 A	11S04W24 B	11S03W30
Ecological Site		Loamy 13-16	Mahogany Savannah 16-22	Shallow Claypan 12-16	Shallow Claypan 12-16	Shallow Claypan 12-16	Shallow Claypan 12-16	Shallow Claypan 12-16	Loamy 13-16	Mahogany Savannah 16-22	Shallow Claypan 12-16	Loamy 13-16	Shallow Claypan 12-16
Indicator													
1. Rills	S,H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
2. Water Flow Patterns	S,H	s-m	n-s	m	s-m	m	m	s-m	s-m	s-m	s-m	s-m	s-m
3. Pedestals/Terracettes	S,H	s-m	s-m	s-m	s-m	m	s-m	s-m	s-m	s-m	s-m	s-m	n-s
4. Bare Ground	S,H	s-m	n-s	s-m	n-s	s-m	n-s	n-s	s-m	n-s	n-s	s-m	m
5. Gullies	S,H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
6. Wind Scoured, Blowouts and/or Depositions	S	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
7. Litter Movement	H	n-s	n-s	n-s	n-s	m	n-s	n-s	n-s	n-s	n-s	n-s	n-s
8. Soil Surface Resistance to Erosion	S,H,B	s-m	s-m	s-m	n-s	n-s	n-s	n-s	n-s	n-s	n-s	s-m	s-m
9. Soil Surface Loss or Degradation	S,H,B	s-m	s-m	m	s-m	m	m	m	s-m	m	s-m	s-m	s-m
10. Plant Community Composition & Distribution Relative to Infiltration & Runoff	H	n-s	s-m	s-m	s-m	n-s	s-m	n-s	s-m	s-m	n-s	n-s	n-s
11. Compaction Layer	S,H,B	n-s	s-m	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
12. Functional/Structural Groups	B	s-m	s-m	s-m	s-m	s-m	m	n-s	n-s	m	n-s	s-m	s-m
13. Plant Mortality/Decadence	B	s-m	s-m	s-m	n-s	m	s-m	n-s	s-m	s-m	n-s	n-s	n-s
14. Litter Amount	H,B	s-m	n-s	s-m	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
15. Annual Production	B	n-s	n-s	n-s	s-m	s-m	s-m	n-s	n-s	n-s	n-s	n-s	n-s
16. Invasive Plants	B	m-e	e	m-e	m	n-s	s-m	m	m	m-e	n-s	n-s	n-s
17. Reproductive Capability of Perennial Plants	B	n-s	n-s	n-s	n-s	n-s	s-m	n-s	n-s	n-s	n-s	n-s	n-s

Appendix W. Rangeland Health Evaluation Ratings, Summer Use Pastures, Nickel Creek Allotment, 2001. (S = Soil/Site Stability Indicator, H = Hydrologic Function Indicator, B = Biotic Integrity Indicator)

Pasture		054810	06574	06579	065711	065714	065714	065719	065721	065724	065725
Location		11S04W10	10S04W23B	10S04W29	11S04W14C	11S04W13	11S03W18B	12S03W03B	12S03W15	12S03W29A	13S03W21
Ecological site		Shallow Claypan 12-16	Shallow Claypan 12-16	Loamy 13-16	Shallow Claypan 12-16	Shallow Claypan 12-16	Shallow Claypan 12-16	Loamy 11-13	Loamy 11-13	Loamy 11-13	Loamy 11-13
Indicator											
1. Rills	S-H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
2. Water Flow Patterns	S-H	n-s	m	s-m	m	m-e	n-s	n-s	s-m	s-m	n-s
3. Pedestals / Terracettes	S-H	n-s	s-m	m	m	m	n-s	s-m	n-s	s-m	s-m
4. Bare Ground	S-H	n-s	s-m	n-s	n-s	m	n-s	n-s	m	s-m	n-s
5. Gullies	S-H	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
6. Wind Scoured, Blowouts and/or Depositions	S	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s	n-s
7. Litter Movement	H	n-s	n-s	n-s	s-m	m	n-s	n-s	n-s	n-s	n-s
8. Soil Surface Resistance to Erosion	S-H-B	n-s	m	s-m	n-s	m	n-s	s-m	s-m	s-m	s-m
9. Soil Surface Loss or Degradation	S-H-B	n-s	m	s-m	m	m	n-s	s-m	n-s	m	m
10. Plants Community Comp. & Distribution relative to infiltration & runoff	H	n-s	s-m	n-s	n-s	s-m	n-s	n-s	s-m	s-m	s-m
11. Compaction Layer	S-H-B	n-s	n-s	n-s	s-m	s-m	n-s	n-s	n-s	n-s	n-s
12. Functional / Structural Groups	B	n-s	s-m	s-m	s-m	m	s-m	s-m	s-m	m	m
13. Plant Mortality / Decadence	B	n-s	n-s	n-s	s-m	n-s	n-s	n-s	n-s	n-s	n-s
14. Litter Amount	H-B	n-s	n-s	n-s	s-m	s-m	n-s	n-s	n-s	s-m	n-s
15. Annual Production	B	n-s	n-s	n-s	n-s	s-m	n-s	n-s	n-s	n-s	n-s
16. Invasive Plants	B	s-m	m	m	n-s	s-m	m	n-s	n-s	m	m
17. Reproductive Capability of Perennial Plants	B	n-s	n-s	n-s	n-s	m	n-s	n-s	n-s	n-s	n-s

Appendix X. Rangeland Health Evaluation Ratings, Fall Use Pastures, Nickel Creek Allotment and Nickel Creek FFR Allotment Pastures, 2001. (S = Soil/Site Stability Indicator, H = Hydrologic Function Indicator, B = Biotic Integrity Indicator)